EFFECTIVENESS OF PELVIC GIRDLE EXERCISE ON PELVIC GIRDLE PAIN AND SPECIFIC ACTIVITIES AMONG PRIMIGRAVIDA MOTHERS ATTENDING ANTENATAL OPD AT SELECTED HOSPITALS, SALEM.

By

Mrs.SATHYA. J

Reg. No: 301421601

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OBSTETRICS AND GYNAECOLOGY NURSING

APRIL – 2016

CERTIFICATE

This is to certify that the dissertation entitled **"Effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities among primigravida mothers attending antenatal OPD at selected hospitals, Salem"** is a bonafide work done by **Mrs.SATHYA. J**, Sri Gokulam college of Nursing, Salem in partial fulfilment of the university rules and regulation for the award of Master of Science in Nursing under the guidance and supervision during the academic year 2016.

Name & Signature of the Guide **: ……**

Mrs. M.D. SANTHI, M.Sc (N).,
Head of the Department,
Obstetrics & Gynaecology Nursing Department,
Sri Gokulam College of Nursing,
Salem - 636 010.

Name & Signature of the Head of Department **: ……**

Mrs. M.D. SANTHI, M.Sc (N).,
Head of the Department,
Obstetrics & Gynaecology Nursing Department,
Sri Gokulam College of Nursing,
Salem - 636 010.

Name & Signature of the Dean/ Principal **: ……**

Prof. Dr. K. TAMIZHARASI, Ph.D (N).,
Principal,
Sri Gokulam College of Nursing,
3/836, Periyakalam,
Neikkarapatti, Salem - 636 010.

CERTIFICATE

Certified that this is the bonafide work of **Mrs.SATHYA. J,** Final Year M.Sc(Nursing) Student of Sri Gokulam College of Nursing, Salem, Submitted in Partial fulfilment of the requirement for the Degree of Master of Science in Nursing to The Tamil Nadu Dr.M.G.R. Medical University, Chennai under the Registration No.**301421601**.

College Seal:

Signature : **……**

Prof. Dr. K. TAMIZHARASI, Ph.D (N).,

PRINCIPAL,

SRI GOKULAM COLLEGE OF NURSING,

3/836, PERIYAKALAM,

NEIKKARAPATTI, SALEM – 636 010

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Approved by the Dissertation Committee on: 17.12.2015

Signature of the Clinical Speciality Guide: **……..……..**

…

Mrs. M.D. SANTHI, M.Sc (N).,
Head of the Department,
Obstetrics & Gynaecology Nursing Department,
Sri Gokulam College of Nursing,
Salem - 636 010.

Signature of the Medical Expert:

……

Dr. P. Chellammal, M.D., D.G.O.,
Consultant, Obstetrician and Gynaecologist,
Sri Gokulam Hospital,
Salem – 636 004.

_____ _____

Signature of the Internal Examiner with Date

Signature of the External Examiner with Date

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LIST OF ABBREVIATIONS

PGP	-	Pelvic Girdle Pain
PPGP	-	Pregnancy related Pelvic Girdle Pain
PLBP	-	Pregnancy related Low Back Pain
PLPP	-	Pregnancy related Low Back Pain and / or Pelvic Girdle Pain
ASLR	-	Active Straight Leg Raise
LBP	-	Low Back Pain

ABSTRACT

A Study was done to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities among primigravida mothers attending antenatal OPD in selected hospitals, Salem.

A Quasi experimental pre-test and post-test control group design was adopted. Non probability purposive sampling technique was used to select 60 primigravida mothers with Pelvic Girdle Pain among which 30 were assigned to experimental group and 30 were assigned to control group. Data was collected over a period of 4 weeks from 31.08.15 to 27.09.15. Pre-test was done for both experimental and control

groups by using Modified Pelvic Girdle Questionnaire and Patient Specific Functional Scale. The researcher demonstrated Pelvic girdle exercise for 3-5 mothers for 30 minutes. After demonstration the mothers instructed to redemonstrate the exercise and the investigator checked their performance also insisted to perform this exercise program 2 times daily for a period of 2 weeks and a logbook was given to record the exercise were performed in their home. Along with this experimental group received a pamphlet which contains Pelvic girdle exercise and contact numbers of samples collected for follow up. All the samples instructed to come at the end of 1st and 2nd week of their antenatal visit after implementation of Pelvic girdle exercise and the post test conducted by using same tools to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities.

Data analysis done by using descriptive and inferential statistics. The result showed that, in pretest majority of mothers had moderate pain in both experimental and control group (66% & 73%) respectively, whereas in post test majority of the experimental group mothers had mild pain in both post test- I (66%) and post test – II (97%) and majority of the control group mothers had moderate pain (66%) in both post test – I and post test – II respectively. In pretest the experimental group mothers had mean Pelvic Girdle Pain score of 35.30±12.13 whereas in post test I & II mean score was 22.33± 7.31 & 12.83± 5.33. The calculated 't' values were 11.98 in post test – I & 12.08 in post test-II which was highly significant at $p \leq 0.05$ level. In pre-test the control group mothers had mean Pelvic Girdle Pain score of 34.03±12.62, whereas in post-test I and II the mean score was 35.53±12.33 and 37.4±12.46 the calculated 't' value were 2.47 in posttest I & 2.15 in post-test II which was not significant at $p \leq 0.05$ level. In pre-test the experimental group mothers had mean specific activity score of 3.02± 1.15 whereas in post-test I & II the mean score was

4.36±0.90 and 6.30±0.78. In pre-test the control group mothers had mean specific activities score of 3.62±0.98 whereas in post-test I & II the mean score was 3.66±1.01 and 3.38±0.97. The calculated 't' values were 0.38 in post-test –I & 1.79 in post-test – II which was not significant at P≤ 0.05 level. Karl-pearson correlation shows that there was a negative correlation between post test scores of Pelvic Girdle Pain and specific activities among experimental group mothers whereas in control group there was positive correlation Hence, it shows that there was reduction in Pelvic Girdle Pain and improvement in specific activities. Pelvic girdle exercise reduces Pelvic Girdle Pain and improves specific activities of the mother. This exercise is easy to follow, simple to do, has no risk and effective to reduce Pelvic Girdle Pain.

CHAPTER – I

INTRODUCTION

" You can't stop the waves

….. but you can learn to surf."

-Anonymus

Pregnancy is a precious period and memorable moment for every woman especially when she conceives first time. During the 40 weeks of pregnancy from the day one till the end of delivery a woman faces physical, physiological and psychological changes resulting some sorts of ailment which may or may not require treatment. One among that is Pelvic Girdle Pain.

Pain at the back of the pelvic is known as ' Pelvic Girdle Pain' (PGP) sometimes also called 'Sacroiliac joint pain' (SIJ). Previously it was referred as 'symphysis pubis dysfunction' and it also termed as ' Pregnancy related Pelvic girdle Pain' (PPP) & 'Pregnancy related Low Back Pain' (PLBP) **(Rob Hicks, 2014).**

Pelvic Girdle Pain during and after pregnancy has been recorded since the 4th century BC by Hippocrates **(Nicolaos K. Kankaris, et.al., 2011).** Softening of joints and ligaments of the pelvis was due to pregnancy that resulting instability of the pelvic joints led to pain in the pelvic region **(Helen Elden, 2008).**

Back and pelvic pain is a common problem during pregnancy. Pregnancy the body produces hormone called relaxin that softens the ligaments in pelvis and other joints which help the fetus to pass through the pelvis during birth and the joints involve more during and just after pregnancy which causes pain or discomfort to the mother **(Vollestad et al., 2012).**

Pain in the pelvic girdle, hips or lower extremities may be due to stretching or tearing injuries sustained at normal or difficult delivery. As pregnancy progresses the skeleton makes several adjustment to accommodate the growing uterus and to prepare for delivery. The relaxation however can lead to pelvic discomfort particularly in late pregnancy **(B.T. Basavanthappa, 2006).**

Pelvic Girdle Pain is experienced between the posterior iliac crest and the gluteal fold particularly in the sacroiliac joints. This may radiate in the posterior thigh and can occur in symphysis pubis. The Pelvic Girdle Pain greatly diminishes the capacity for standing, walking and sitting **(A.Vleeming,2008).**

Long term morbidity can be reduced if pregnant women with Pelvic Girdle Pain are diagnosed and treated appropriately. Early diagnosis and treatment have better prognosis. Pelvic Girdle Pain can be treated with various modalities. The simplest one is Pelvic girdle exercise.

Significant reduced strength of the Transverse abdominis, internal oblique, pelvic floor, lumbar multifidus and inadequate coordination of all lumbopelvic muscle isoften observed in mothers with PPGP **(Gutke et al., 2008;O'Sulivan, 2010; Aldobe et al., 2012 and Arumugam et al.,2012).**

Pelvic girdle exercise strengthens stomach, back, hip and pelvic floor muscles and helps to realign the joints, it can reduce pain and improve functional abilities **(Stuge et al., 2004, Vleeming et al., 2008)**. Regular exercise may help pregnant women skip common Pelvic Girdle Pain while carrying fetus to end of term.

NEED FOR THE STUDY:

All over the world Pelvic Girdle Pain is a significant problem for pregnant women. Women who experience Pelvic Girdle Pain in the present pregnancy continues to have in the puerperium period and are at risk of developing PGP in subsequent pregnancy.

Women with Pelvic Girdle Pain or symphysis pubis dysfunction during pregnancy has functional difficulties that significantly affecting quality of life **(J.Depledge, 2005).**

W.H. Wu . et.al., (2004) conducted a study regarding Pregnancy-related Pelvic Girdle Pain and it had shown that among overall about 45% of pregnant women and25% of post natal women suffer from pregnancy related Pelvic Girdle Pain and Pregnancy related Low Back Pain (PLBP). It shows that about 50% have Pregnancy related Pelvic Girdle Pain and 35% have pregnancy related low back pain and 20% have both conditions combined. It concluded that Pregnancy related Pelvic Girdle Pain deserves attention from the researchers in all countries.

Jan.M.A.Mens , et.al.,(2011)conducted a study regarding severity of lumbo pelvic pain during pregnancy at Netherlands. It shows that 80% of mother reported mild to moderate pain and 20% reported severe pain.

Heather Pierce, (2010) conducted a study at Sydney regarding Pregnancy related Low Back Pain and Pelvic Girdle Pain. It revealed that among mothers attended antenatal clinic, 71% of them reported PLPP in that 67% had 'mild disability'. But out of them only 25% of mothers received treatment for PLPP. This study also reveals that most of the mother reported that they have difficulties to do activities of daily living due to PLPP.

PLBP is often (68%) unreported among these only 25% receiving treatment for symptom management other one third continues suffering from low back pain even during postpartum. Those women who continue to experience low back pain in the postpartum period more prone for postpartum depression. Hence effective management of PLBP is very important **(Peterson et al., 2012).**

Hilde Stendal Robinson, (2010) conducted a cohort study in Norway regarding Pelvic Girdle Pain and disability during and after pregnancy. It shows that disability is increased in late pregnancy and the Pelvic Girdle Pain has great disability in pregnancy. Also prevalence rate of PGP in early pregnancy is 35% and in late pregnancy is 62% which indicates that there is a need for attention by health care providers.

Studies have revealed that Pregnancy related Pelvic Girdle Pain is a common symptom among pregnant women in European population and in many studies the average reported prevalence of Pregnancy related Low Back Pain and Pelvic Girdle Pain is 45.3%.

Majority (62.5%) of women having pelvic pain get relieved within 1 month after delivery but 8.6% continued to experience Pelvic Girdle Pain even two years after delivery in developing countries **(Albert, et al., 2008).**

In 2005, the National Centre for Health Statistics reported that the prevalence rate of PGP is 72% in India.

Gupta Monika, et.al., (2014) conducted a study on 'Prevalence of Pregnancy related Pelvic Girdle Pain in Indian primigravida mother' at New Delhi in India. Concluded that 1 in every 2 primigravida mothers suffered by Pregnancy related Pelvic Girdle Pain and lumbo pelvic pain also she reported that high prevalence of Pelvic Girdle Pain observed at 16 and 36 weeks of gestation.

AratiMahishale, SudiniSantosh and S.Borkar(2015) conducted a cross sectional study at Tertiary care centre at Belagavi regarding prevalence of patterns of Pregnancy induced Pelvic Girdle Pain. Among 225 pregnant women 65% had posterior pelvic pain, 31% had low back pain and 15% had anterior pelvic pain. This study also shows that the highest rate of PGP seen in primigravida mothers at 38 weeks of gestation.

Mukkannavarparshant, et.al., (2013) conducted a study regarding PGP after child birth at Dharwad in India shown that out of 284 women 41% reported Pelvic Girdle Pain in the postpartum period.

Preetha Ramachandra, et.al., (2014) conducted a descriptive study at Manipal in India to identify prevalence of musculo skeletal dysfunction among Indian pregnant women. It was found that 37% experienced Pelvic Girdle Pain in the second trimester.

Hafsa usmani, (2011) conducted a study to assess the effectiveness of STP on knowledge regarding PGP in pregnancy among primigravida mother attending antenatal OPD in SNR hospital at Kolar district at Karnataka, concluded that prevalence rate of PGP was high (72%) among primigravida mother and they have inadequate knowledge regarding Pelvic Girdle Pain.

PGP was observed 74% in first pregnancy it shows the frequency of pain increases as the pregnancy advances, that is 12% in the first trimester, 34% in the second trimester and 52% in the third trimester **(Emily. R.Howell, 2012).**

In Pelvic Girdle Pain, pain is mainly due to pelvic instability which is mainly affecting the quality of life that may affect the mother psychologically. Most of the mothers not having adequate knowledge regarding Pelvic Girdle Pain hence not seeking any treatment for it. So many research article shown that the untreated

Pregnancy related Pelvic Girdle Pain sustains in postpartum period and for some women it continues as a lifelong problem which is affecting their daily activities.

Pelvic Girdle Pain can be treated with various modalities like specific stabilizing exercise, pelvic support belts, acupuncture, Transcutaneous Electrical Nerve Stimulation (TENS), analgesics and changing life style. All the treatment modalities mainly aimed to relieve pain, improve muscle strength, pelvic stability and prevention of recurrence in future.

Pelvic Girdle exercise is simple exercise able to follow by the mothers easily and helps to improve the stability of pelvic and back thereby reduces pain and improves specific activities. Comparatively with other modalities, Pelvic girdle exercise is simple, easy to follow and effective for Pelvic Girdle Pain. So the researcher felt that there is a need to conduct the study regarding effectiveness of Pelvic girdle exercise on reduction of Pelvic Girdle Pain and improvement in specific activities.

STATEMENT OF THE PROBLEM

A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected Hospitals, Salem.

OBJECTIVES

- To identify the primigravida mothers with Pelvic Girdle Pain of both experimental and control group.
- To assess the level of Pelvic Girdle Pain among primigravida mothers of both experimental and control group before and after implementation of Pelvic girdle exercise.

- To assess the specific activities among primigravida mothers of both experimental and control group before and after implementation of pelvic girdle exercise.
- To associate the Pelvic Girdle Pain and specific activities scores with selected demographic variables among primigravida mothers of both experimental and control group.
- To correlate post test scores of Pelvic Girdle Pain and specific activities among primigravida mothers of both experimental and control group.

OPERATIONAL DEFINITIONS

Assess:

It refers to the statistical measurement of Pelvic Girdle Pain and specific activities among primigravida mothers in experimental group after implementation of Pelvic girdle exercise.

Effectiveness:

It refers to the extent to which the Pelvic girdle exercise reduces Pelvic Girdle Pain and improve specific activities among primigravida mothers as determined by the differences between pretest and posttest scores.

Pelvic Girdle Pain:

An unpleasant sensation felt by the mother at the front or back of the pelvis which may radiate to buttocks and lower extremities as identified by Active Straight Leg Raise test.

Specific activities:

The activities such as bending, squatting, rolling over on bed, getting out of bed, lying on the floor, sitting and getting up from the floor, prolonged walking, prolonged standing, prolonged sitting, lifting heavy objects, climbing stairs and walking to be assessed after implementation of Pelvic girdle exercise.

Pelvic girdle exercise:

Pelvic girdle exercise consists of abdominal stabilization exercise, pelvic floor exercise, glueteus maximize exercise, latissmus dorsi muscle exercise, hip abdurator muscle exercise, pelvic tilting and pelvic bridging exercise which helps to improve the stability of the pelvis and back.

Primigravida mother:

Mother who is conceived for first time.

ASSUMPTIONS

1. Primigravida mothers may have Pelvic Girdle Pain during last trimester of pregnancy which affects their specific activities.
2. Pelvic girdle exercise may reduce Pelvic Girdle Pain and improve the level of specific activities.

HYPOTHESES

H_1: There is a significant difference between pre and post test scores on Pelvic Girdle Pain among primigravida mothers of Experimental and control group at $p \leq 0.05$ level.

H_2: There is a significant difference between pre and post test scores of specific activities among primigravida mothers of Experimental and control group at $p \leq 0.05$ level.

H_3: There is a significant difference between post -test score on Pelvic Girdle Pain and specific activities among primi gravida mothers of experimental and control group at $p \leq 0.05$ level.

H_4: There is a significant association between pre test scores of Pelvic Girdle Pain and specific activities with demographic variables among primigravida mothers of both experimental and control groupat $p \leq 0.05$ level.

H_5:There is a significant association between post test scores of Pelvic Girdle Pain and specific activities with demographic variables among primigravida mothers of both experimental and control groupat $p \leq 0.05$ level.

H_6: There is a significant correlation between post test scores of Pelvic Girdle Pain and specific activities of both experimental and control group mothers at $p \leq 0.05$ level.

PROJECTED OUTCOME

The study was conducted to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities among primigravida mothers. This exercise will reduce Pelvic Girdle Pain and improve specific activities of the primigravida mothers.

DELIMITATION

The study is limited to,

1. Primigravida mothers at 36 weeks of gestation having pain on the symphysis pubis.
2. Have positive ASLR (Active Straight Leg Raise) test.
3. 60 samples only
4. 4 weeks of data collection

CONCEPTUAL FRAMEWORK:

Conceptual framework is an interrelated concepts or abstractions assembled together in rational, scheme by virtue of their relevance to a common theme.**(Polit, 2010).**

A framework is a brief explanation of a theory or those portions of a theory to be tested in a quantitative study. Every quantitative study has a framework. Modified Widenbach's Prescriptive Theory-A helping art of clinical nursing was used in this study which is described as a conceiving of desired situation and the ways to attain it. This theory consists of three factors:

1. Central purpose, 2. Prescription, 3. Realities

Central purpose:

It refers to what the nurse wants to accomplish. It is the overall goal toward which a nurse strives; it transcends the immediate intent of the assignment or task by specifically directing activities toward the patient's good.

The central purpose of this study is reduction in level of Pelvic Girdle Pain and improvement in specific activities.

Prescription:

It refers to the plan of care for a patient. It specifies the nature of action that will fulfill the nurses central purpose and a rationale for that action.

In this study the prescription is Pelvic girdle exercise which will reduce Pelvic Girdle Pain by increasing pelvic stability, muscle strength thereby improves specific activities.

Realities:

Realities refer to physical, physiological, emotional and spiritual factors that come in to play in a situation involving nursing actions. The five realities identified by Widenbach are agent, recipient, goal, means, and framework.

Agent:

The agent is the practicing nurse or a designee who has the personal attributes, capacities, capabilities, commitment, and competence to provide nursing care. In this study, the agent is the researcher who is a registered nurse and midwife has capacities, commitment and competency to provide Pelvic girdle exercise.

Recipient:

The recipient is the one who receives a nurse's action or on whose behalf of actions are taken, the recipient is vulnerable and dependent. In this study the recipients are primigravida mothers at 36 weeks of gestation with Pelvic Girdle Pain.

Goal:

The goal is the nurse's desired outcome. In this study the goal is to reduce the level of Pelvic Girdle Pain and to improve specific activities among primigravida mothers with Pelvic Girdle Pain.

Means:

The means are the activities and devices used by the nurse to achieve the goal. In this study the mean is Pelvic girdle exercise. Tools such as Modified Pelvic Girdle Questionnaire and a Patient Specific Functional Scale were used to assess the level of Pelvic Girdle Pain and specific activities.

Framework:

The framework refers to the facilities in which nursing is practiced. It comprises human, environmental, professional, and organizational aspect of care. It consists of all the extraneous factors and facilities in the situation that affects the midwife's ability to obtain the desired outcome.

In this study the framework includes,

Human	:	Primigravida mothers at 36 weeks of gestation.
Environment	:	OBG outpatient department at selected hospitals.
Professional	:	Researcher having well defined knowledge on Pelvic Girdle Pain, specific activities and Pelvic girdle exercise.
Organizational:		In each session pelvic girdle exercise demonstrated for3-5 primigravida mothers for 30 minutes and administered pamphlet on Pelvic girdle exercise.

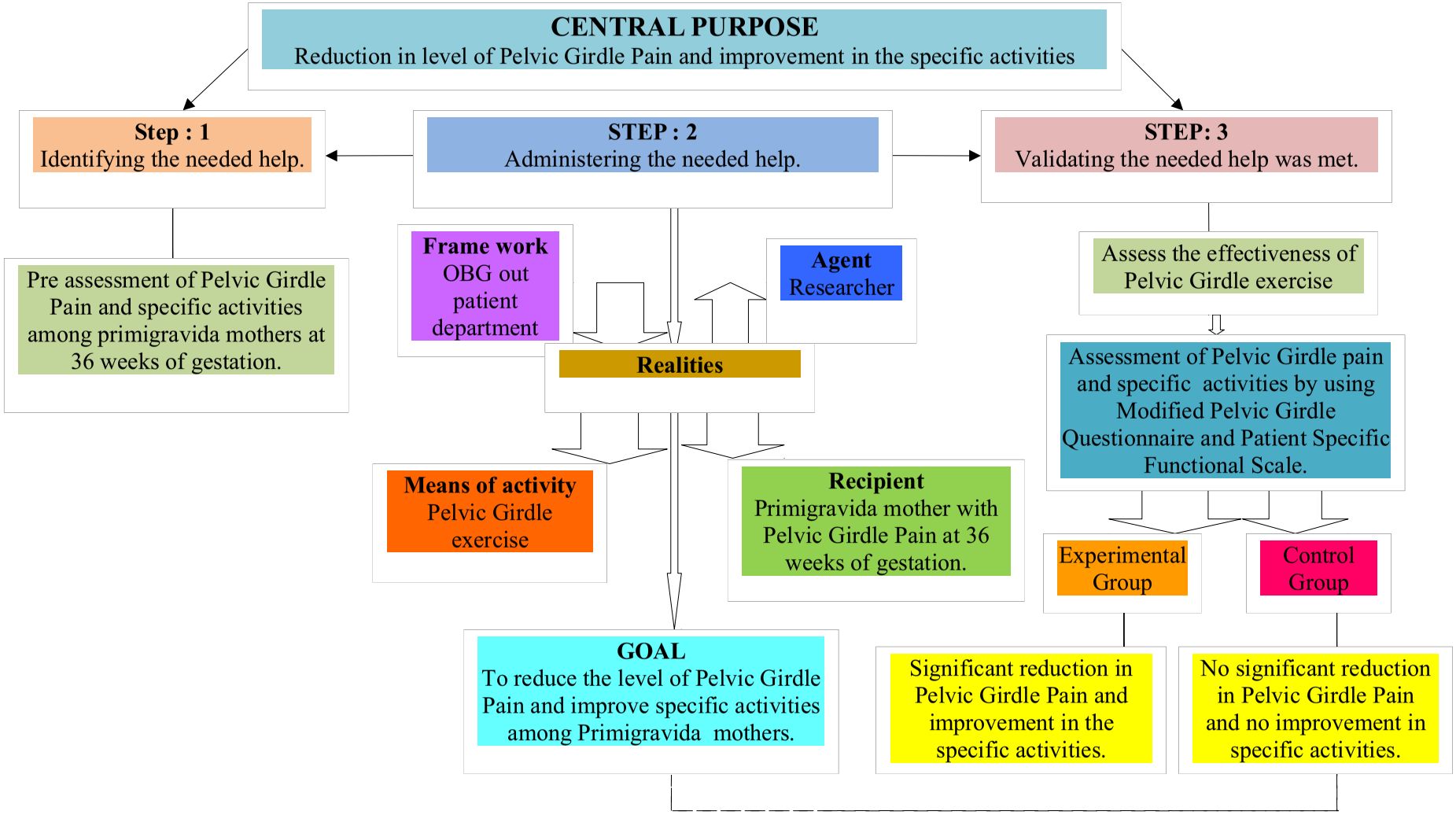

Figure -1.1:Conceptual framework based on Modified Widenbach's Prescriptive Theory -A Helping Art of Clinical Nursing(1964)

Summary :

This chapter deals with need for the study, statement of the problem, objectives, assumptions, operational definition, hypotheses, projected outcome, delimitation and conceptual framework.

CHAPTER-II

REVIEW OF LITERATURE

A critical summary of research on a topic of interest, often prepared to put a research problem in context **(Polit, 2010**).

A review of literature provides the researcher with the current theoretical and scientific knowledge about a particular problem, and resulting in a synthesis of what is known and unknown **(Nancy burns, 2010)**.

The review of literature in this chapter has been furnished under the following headings.

- Literature related to prevalence of Pelvic Girdle Pain.
- Literature related to effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities.
- Literature related to reliability of Patient Specific Functional Scale.

1. Literature related to prevalence of Pelvic Girdle Pain

Annelie Gutke, Hans Christian o' Stggard, and Brigtta O' Berg (2006) conducted a cohort study at Sweden. The main purpose of the study was to identify the prevalence of Pregnancy related Pelvic Girdle Pain (PPGP) and lumbar pain and its effect among pregnant mother. In this study 313 mothers were selected who fulfilled inclusion criteria and basic demographic data collected. Visual Analogue Scale used to assess the level of pain and Oswestry Disability Index (ODI) used to assess the level of functional disability. Statistical analysis calculated at $p \leq 0.005$ level by using Kruskal-Wallis test, Mann-Whitney U test and Fisher exact test. The end result shows that 54% (n=99) of women had PPGP,17% (n=33) had lumbar pain and 29% (57) had both combined PPGP and lumbar pain and it also reveals that 57% of mothers with PPGP and 70% of mothers with combined pain had increased level of pain (> 10 mm) and highest disability (> 10% ODI) whereas only 30% of mothers

with lumbo pelvic pain reported increased level of pain and highest disability. This study also concluded that PPGP severely affects the women's health and their functional ability.

Heather Pierce (2010) conducted across-sectional survey regarding Pregnancy-related low back and pelvic girdle pain at Australia **.**The aim of this study was to investigate the prevalence of PLPP, and the associated pain and disability experienced by a sample of Australian women. 105 pregnant women were taken as a sample who attended public hospital antenatal clinic and questionnaire used to collect demographic data, exercise habits and life style. Women reporting PLPP completed a second survey including a pain diagram. Visual Analogue Scale and the Oswestry Disability Index used to assess the intensity of pain and level of disability respectively. Open ended questions used additionally to reveal the sufferings and problems of the women due to PGP and LBP. The SPSS package were used and samples were analysed descriptively. The Pearson's Chi-Square test was used to associate the variables. The prevalence of self reported PLPP during the current pregnancy was 71% out of this 17% had LBP, 33% had PGP and 50% had both. The mean pain score was 6.5 ±2.2, the mean ODI score was 29±16.7.This study also shown that out of 71% of mother only 25% received treatment for PGP such as physiotherapy, analgesics. And also they reported that Pelvic Girdle Pain affecting their lifestyle, psychological wellbeing and their ability to cope.

Hilde stendal Robinson, Anne Marit Mengshoel, Marit.B. Veirod and Niana Wllested (2010) conducted a prospective cohort study at Norway. The aim of this study was to identify factors associated to Pelvic Girdle Pain and disability during and after pregnancy and to evaluate prevalence of Pelvic Girdle Pain during various time period of pregnancy. 326 women selected with Pelvic Girdle Pain.

Questionnaire were used to assess the risk factors for Pelvic Girdle Pain at 30 weeks of gestation and 12 weeks of postpartum. Pain provocation tests, Active Straight Leg Raise test used for clinical evaluation. Pain intensity and disability considered as a variable visual analogue scale and disability rating index used to assess the variables respectively. Multivariable linear regression analyse shown significant variation in DRI (R^2=0.32,P≤ 0.001). In this study it was concluded that distress was a significant risk factor for developing disability (p=0.006) and women with PGP have more pain in pregnancy than 12 weeks of postpartum period.

Gupta Monika, Srivastava Shilipi and Khan Sohrab (2014) conducted a non-experimental observational cross sectional study at New Delhi in India. The purpose of this study was to identify the prevalence of lumbopelvic pain and Pregnancy related Pelvic Girdle Pain among Indian primigravida mothers.227 primigravida mothers aged between 20-35 years at 12-36 weeks of gestation selected as samples from Out Patient Department at a tertiary care hospital at New Delhi. After getting consent demographic data collected through questionnaire and pain intensity was analysed by using a visual analogue scale(VAS). Out of 227 women 137 women reported lumbopelvic pain in that 68 women had PPGP and 69 had both PPGP and PLBP. The mean pain intensity analysed by VAS was 5.2± 1.09. The mean intensity score PPGP and combined pain groups were 5.5±0.78 and4.9±1.26 respectively. This study also shown that the intensity of PPGP was high at 16 weeks and 36 weeks of gestation. This study also concluded that about 1in every 2 primigravida mothers suffered by PPGP and PLBP.

Preetha Ramachandra, Arun.G, Maiya, Pratap Kumar and Asha Kamath (2014) conducted a descriptive study at Manipal in India. The main purpose of the

study was to identify prevalence of musculo skeletal dysfunction among Indian pregnant mothers.261 primigravida mothers with in the age group of 20-35 years selected as samples from tertiary hospitals. A written consent obtained from participants and structured questionnaire used to collect demographic data. The mean age group of the pregnant women was 27.1± 3.4 years. The interpretation reveals that 3.3%, 37%,32.5% of mothers had Pelvic Girdle Pain in the I trimester and II trimester and III trimester respectively and 52% of mothers reported pregnant women suffered by symphysis pubic dysfunction (SPD) in their third trimester also reported that they have difficulty for squatting to do toileting activities, to stand on one leg, to get up from the chair, to roll over on bed and while sitting on the bed or on the floor.

2. Literature related to effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities.

Jill Depledge, Peter J MC Nair, Cheryl Keal Smith and Maynard Williams (2005) conducted a randomized masked prospective experimental clinical study at Newzeland . The purpose of this study was to identify the effects of exercise, advice, and pelvic support belts on the management of symphysis pubis dysfunction during pregnancy. Ninety pregnant women with symphysis pubis dysfunction were randomly assigned to 3 treatment groups. Specific muscle strengthening exercises and advice regarding lifestyle activities were given to all the 3 groups, and 2 of the groups additionally used either a rigid pelvic support belt or a non rigid pelvic support belt. The dependent variables measured were a Roland-Morris Questionnaire score, a Patient-Specific Functional Scale score, and a numerical pain score (101-point). The data collected were interpreted by ANOVA. It had shown that the Roland-Morris Questionnaire scores decreased by 22.7%, 15.9%, and 17% the Patient-Specific Functional Scale scores decreased by 38.6%, 25.4%, and 30.4% the average pain

scores decreased by 31.8%, 13.9%, and 29.2% the worst pain scores decreased by 22.6%, 12.7%, and 10.8% ($P<.05$) for the exercise-only group, the group receiving exercise plus a non rigid belt and the group receiving exercise plus a rigid belt, respectively. It also concluded that, for the mothers with symphysis pubis dysfunction it is better to stabilize the muscles with specific exercise rather than using external device.

Nilson-wikmar (2005) conducted a randomized assessor-blinded clinical trial study. The objective of this study was to compare 3 different physical therapy treatments on pain and activity of the mothers with Pelvic Girdle Pain during pregnancy and at 3rd, 6th and 12th month of postpartum.118 women with Pelvic Girdle Pain randomly distributed in to 3 different treatment groups (n=40, n=41, n=37). Pain intensity was analysed by visual analogue scale and activity ability assessed by the Disability Rating Index. At the end of the study the interpretation had shown that in all three groups pain decreased and the activity ability increased with time.

Helen Elden (2008) conducted a randomised single-blind trial study at Gothenberg. The aim of this study was to study efficacy, safety and post pregnancy effects of standard treatment, acupuncture and stabilising exercises given to pregnant women with PGP. The sample consist of 386 pregnant women (mean age 30.5; SD 4.3 years) with PGP randomly assigned as n= 108 (mean age 30.8; SD 4.8 years), n=107 (mean age 30.6; SD 4.0 years), n= 106 (mean age 30.0; SD 4.0 years) in to three different groups respectively. Standard treatment group received information about Pelvic Girdle Pain, pelvic belt and home exercise program. Experimental group II received standard treatment plus acupuncture. For them 10 specific acupuncture points selected and needles placed for 30 minutes. Experimental group III received stabilizing exercise along with standard treatment. In this group all the samples

performed exercise in home. Severity of PGP was assessed one week after intervention and at follow up 12 weeks after delivery. The SAS software package was used for statistical analysis. $P<0.05$ was considered significant. Analysis of variance (ANOVA) was used to analyse baseline data. The Mann–Whitney U test was used to compare differences between the groups and χ^2 was used for variables. At the end it was interpreted that comparatively stabilizing exercise group (median difference = 9, $p = 0.0312$) and acupuncture group (median difference = 14, $p = 0.013$) had less pain than the standard group. Hence it concluded that acupuncture and stabilizing exercises with standard treatment relieved PGP in pregnant women and it was effective for PGP during pregnancy.

Annelie Gutke, Jenny Sjodahl, and Brigtta O' Berg (2010) conducted a prospective, randomized, single blinded, clinically controlled study. The main purpose of the study was to identify the efficiency of home based specific stabilizing exercise for the treatment of persistent postpartum Pelvic Girdle Pain. 88 women at three months postpartum with Pelvic Girdle Pain were selected as samples and allotted in to two group s(n_1=34, n_2=54) respectively. The samples in treatment group were taught about specific stabilizing exercise focusing on transverse abdominal muscles, lumbar multifidus muscle and the pelvic floor muscles also instructed to do daily with regular activities. All the mothers were instructed to maintain a daily diary for exercise program. The control group mothers received only information regarding Pelvic Girdle Pain and explained as it is common during pregnancy period will resolve within two to three months after a delivery. Demographic information collected by using structured questionnaire. The dependent variables are disability, intensity of pain and quality of life were measured by Oswestry Disability Index, visual analogue scale, and EuroQol instrument (EQ- SD) respectively. Follow up

done at 3rd (74%) and 6th month (68%) of postpartum and the information collected and analysed by using t-test, Mann-Whitney U test,χ^2 test and Fishers exact test. Group comparison shows that in experimental group the disability score was reduced by -4, -8 (p=0.05) from 18 and pain intensity reduced by -21,-20 from 35 (p=0.01) and it also reveals that 54% and 63% of mothers were satisfied with the improvement in their symptom at 3rd and 6th month of postpartum respectively.

Judith Kluge , et.al., (2011) conducted randomized controlled study at south Africa. The main purpose of the study was to identify effect of specific stabilizing exercise on pain intensity and functional ability in women with pregnancy- related low back pain. 50 women with in the age group of 20 – 40 years at 16 to 24 weeks of gestation with low back pain selected as study sample and assigned in to groups (n_1=24, n_2 = 26). Oral consent was received. Questionnaire used to collect information regarding demographic data, daily activities and level of pain. Diagrams used to differentiate lumbar pain, Pelvic Girdle Pain and combined pain. Numerical rating scale and Likert-modified Rolland Morris Disability scale used to assess the level of pain and disability respectively. All participants received information regarding posture changes, use of pillows, methods to turn and to get out of bed. Additionally experimental group mothers received handout regarding exercises and steps also got daily diary to record about practice of exercise in home. Exercises taught for group of mothers (1 to 3) for 30 – 45 minutes by investigator and follow up done every second week for 10 weeks. The investigator maintained telephonic communication to call up next schedule and to motivate to practice exercises regularly. After 10th week both experimental and control group mothers filled self administered question and statistical analysis were done by using SPSS package. Pre intervention had shown that 73%, 4%, 23% of experimental group mothers and 71%, 8%, 21% of control group

mothers had lumbar pain, Pelvic Girdle Pain and combined pain respectively. The pre and post test value of experimental group mothers for level of pain and functional ability were 30.0, 71.0 ($p<0.01$) & 18.5, 39.5 ($p=0.29$), for control group mothers they were 31.0, 77.5 ($p=0.89$) & 33.0, 77.0 ($p = 0.70$) respectively. The study concluded that a specific exercise programme decreased level of pain intensity and improved functional ability among experimental group mothers.

Caroline D.Peterson, Mitchell Hass and W.Thomas Gregory (2012) conducted a pilot randomized control trial at Portland. The aim of the study was to compare the effectiveness of exercise, spinal manipulation and neuro emotional technique on pregnancy related low back pain. 57 primigravida mothers with low back pain randomly assigned in to three treatment groups ($n_1=22$, $n_2=15$, $n_3=20$). Rolland Morris Disability Questionnaire and Numerical Pain Rating scale were used to assess disability and the level of pain respectively. First group samples were received a booklet which contains pelvic tilting, pelvic floor, gluteusmaximus, Latissimus dorsi and hip abductor strengthening exercise and recommendations. Second group samples received spinal manipulation therapy. For them hypo mobile joints were isolated and high velocity ‘low amplitude thrust was applied. Third group received Neuro Emotional Technique which consists of mind body relaxation technique. Post assessment scheduled along with regular antenatal visit. Statistical analysis done by using SPSS package. The interpretation had shown that in all three groups there was significant improvement in functional ability (30% or 4 point)and also most of the mothers in the exercise group and Spinal manipulation therapy shown reduction in pain intensity (30% or 2 point) and improvement in functional ability ($p=0.002$). This study also concluded that in all three groups 50% of improvement

observed and there was no statistical difference among groups, also the samples during 37 weeks reported that they were satisfied with the improvement.

Stuge Britt, Laerum Even, Kirkesda Gitle, Vollestand and Nina (2014) conducted a randomised controlled trial study by using stratified block design at Norway. The aim of this study was to evaluate the effect of specific stabilizing exercises for patient with Pelvic Girdle Pain. The variables evaluated were Pelvic Girdle Pain, functional status and quality of life.81 women with Pelvic Girdle Pain were assigned randomly to two treatment groups. One group received physical therapy with specific stabilizing exercise and other group received physical therapy without specific stabilizing exercise for 20 weeks. All the variables assessed after intervention and one year after postpartum. It shown that there was significant reduction in pain intensity among specific stabilizing exercises group than the control group. It also shown that there was considerable difference (30 mm) in median score of evening pain and more than 50% reduction in disability observed among experimental group.

3. Literature related to reliability of Patient Specific Functional Scale

A B Chatman et.al, (1997) conducted a study at Atlanta to assess the reliability and validity of patient specific functional scale among patients with knee dysfunction. 38 patients were selected as samples and Patient Specific Functional Scale was implemented. Test- retest method used to check the reliability. The result finding proved that the validity was good, 'r' value was 0.84 which is highly significant and the Pearson's correlation was 0.78.

MichaelD. Westaway, Paul W. Stratford and Jill M. Binkley (1998) conducted a study at Canada to identify the validity and reliability of the patient specific functional scale among patients with neck dysfunction. 31 samples were

selected based on inclusion criteria and patient specific functional scale was administered. Test-retest method was used to find out the reliability. The end result concluded that the reliability of Patient Specific Functional Scale was highly significant (r = 0.92) and efficient to use.

Cleland JA, Fritz JM and Whitman JM (2006) conducted a cohort study at Concord to determine the reliability and validity of Patient Specific Functional Scale and Neck Disability Index among patients with cervical reticulopathy. 38 samples were selected and applied Neck Disability Index and Patient Specific Functional Scale. Test-retest method used to check reliability of both tools and the finding had shown that 'r' value was 0.8 and 0.6 for Patient Specific Functional Scale and Neck Disability Index respectively.

Hefford.C, Abbott JH, Arnold R and Boxtor GD (2012) conducted a cohort study at Canada on patient specific functional scale- validity, reliability and responsiveness among patients with upper extremity musculoskeletal problems. 180 samples those who participated completed the Patient Specific Functional Scale. Validity and reliability checked by using independent samples test and correlation coefficient respectively. The end result shown that the reliability of Patient Specific Functional Scale obtained was r = 0.7 which is significant.

Summary:

This chapter deals with review of literature related to prevalence of Pelvic Girdle Pain and the effectiveness of Pelvic girdle exercise in the management of Pelvic Girdle Pain and reliability of Patient Specific Functional Scale.

CHAPTER -III

RESEARCH METHODOLOGY

The methodology of research indicates the general pattern of organizing the procedure for gathering the valid and reliable data for the purpose of investigation. **(Polit D.F, and Hunger, 2003).**

The present study aims to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activity level among primi gravida mothers attending antenatal OPD at selected hospitals, Salem.

Research Approach:

The research approach adopted for this study is Quantitative Experimental Research Approach.

Research Design:

A Quasi experimental research design (pre-test and post-test control group design) is chosen to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities among primi gravida mothers attending antenatal OPD at selected hospitals, Salem.

$$E = O_1 \ X O_2, O_3$$

$$C = O_1 - O_2, O_3$$

E = Experimental group.

C = Control group.

--- = No randomization

O_1 = Pre-test.

O_2, O_3 = Post-test.

X = Interv

Research Approach
Quantitative Experimental Research Approach.
Research Design
Quasi Experimental Research Design
(pre-test and post-test control group design)

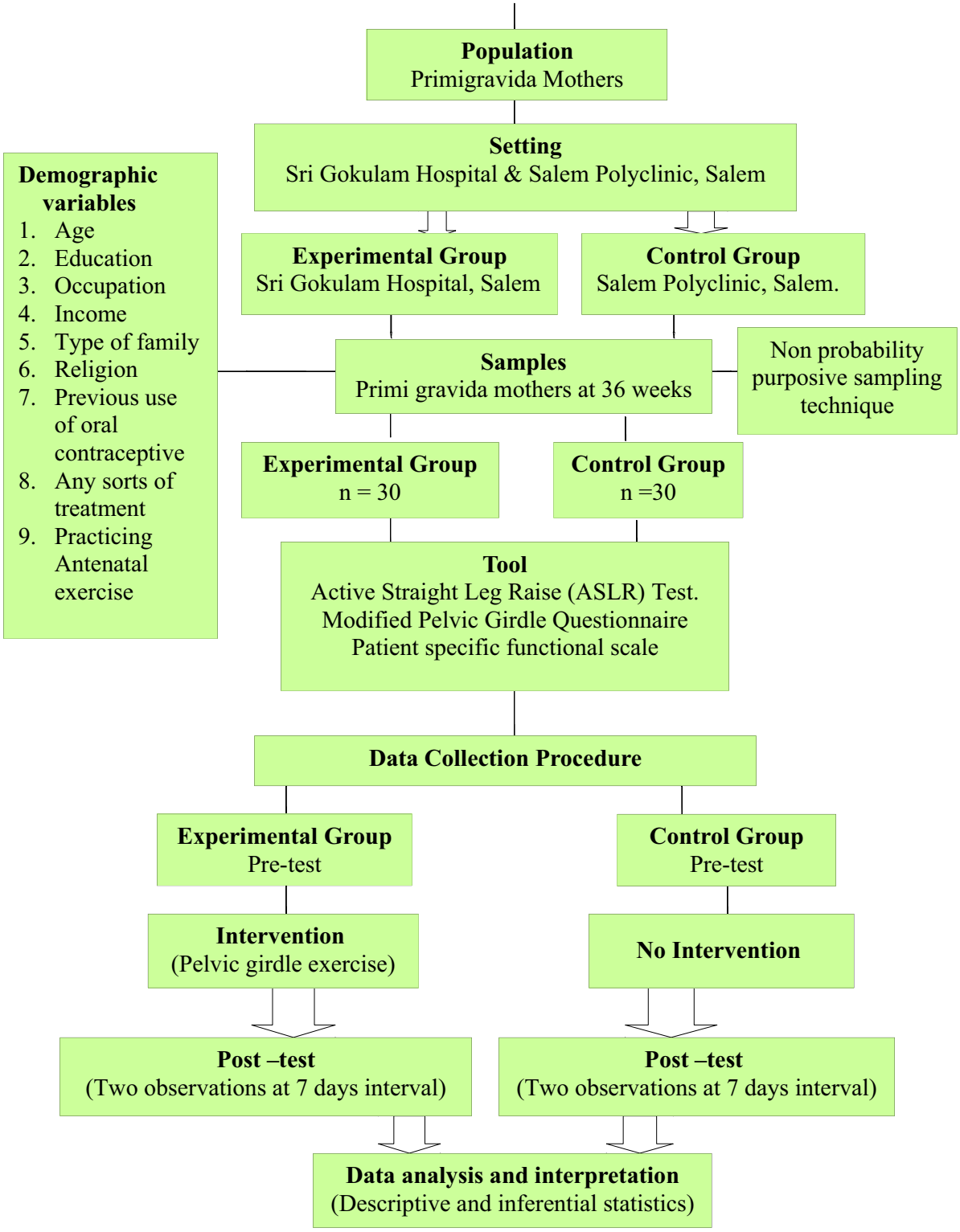

Figure 3.1: Schematic Representation of Research Methodology

Population:

Population is defined as the entire set of individuals or objects having some common characteristics **(Polit D.F & Beck, Tatano Cheryl, 2008).**

The study population includes the primigravida mothers attending antenatal OPD.

Description of the Setting:

Setting is the physical location and conditions in which data collection takes place in a study **(Polit D.F & Beck, Tatano Cheryl, 2008).**

The study was conducted in Sri Gokulam Hospital, Salem and Salem Poly Clinic Hospital which are located 1 km away from Salem New Bus Stand because of the geographical proximity, the economy of time, money access and feasibility.

Sample:

Sample is defined as the subset of population, selected to participate in a study **(Polit D.F & Beck, Tatano Cheryl, 2008).**

Samples of the study were primi gravida mothers who fulfilled the inclusive criteria.

Sample Size: Sample size in determined by using Mahajan's formula.

$n = 4pq / L^2$

n = Sample size

L = Allowable error

P = Percentage of population

Q = 1-P

P = 8.06

$n_1 = 4x8.06x91.94/100 = 29.64$

$n_2 = 4x\ 8.40\ x\ 91.60/100 = 30.7$

n = 30 samples

The sample size of this study was 60 primi gravida mothers (30 in experimental group and 30 in control group).

Sampling Technique:

Purposive sampling technique was adopted for this study. 30 samples of experimental group was selected from Sri Gokulam hospital and 30 samples of control group was selected from Salem Polyclinic hospital.

Criteria for Sample Selection:

Inclusion Criteria:

- Mothers who are at 36 weeks of gestation.
- Mothers who are having pain in symphysis pubis and positive Active Straight Leg Result (ASLR) test.
- Mothers who can understand Tamil or English.
- Mothers who know to write in Tamil or English.

Exclusion Criteria:

- Mothers who are having mental impairment.
- Mothers who are having high risk medical and surgical conditions such as pelvic inflammatory diseases, pelvic injuries, any fracture or surgery in the back, hip and pelvis.
- Mothers who are having high risk obstetrical conditions like placenta praevia and cervical incompetence.
- Mothers who are not willing to participate in the study.
- Mothers for receiving any pharmacological treatment for Pelvic Girdle Pain.

Variables:

- **Independent variable:** Pelvic girdle exercise.
- **Dependent variable:** Pelvic Girdle Pain and specific activities.
- **Extraneous variable:** Age, Education, occupation, income, type of family, religion, previous use of oral contraceptives, treatment received for Pelvic Girdle Pain and practice of antenatal exercise.

Description of Tool:

It consists of four sections.

Section-A:

ASLR test to identify mother with Pelvic Girdle Pain for both experimental and control group.

Section-B:

Demographic variables like Age, Education, occupation, income, type of family, religion, previous use of oral contraceptives, treatment received for Pelvic Girdle Pain and practice of antenatal exercise.

Section-C:

Modified Pelvic Girdle Questionnaire and Patient Specific Functional Scale.

Section–D:

Pamphlet on Pelvic girdle exercise.

Validity and Reliability of the Tool:

Validity:

Validity refers to the degree to which an instrument measures what it suppose to be measured **(Polit,1998).**

The entire tool was validated by 8 Experts, including 2 Obstetrician and Gynaecologist, 1 Physiotherapist, 5 Nursing Experts. Experts were requested to judge the tool for its content, clarity, sequence and relatedness. Suggestion given by experts were accepted and the tool was modified. The tool was developed in English and translated into Tamil.

Reliability :

Reliability of an instrument is the degree of consistency measures that attribute it is supposed to be measured (**Polit and Hungler, 2008).**

The reliability of the Modified Pelvic Girdle Questionnaire was checked and established by using test-retest method. The reliability coefficient obtained for this

tool was r = 0.9, which shows that the tool was reliable. Hence the tool was considered for proceeding.

Pilot study:

A pilot study was conducted from 24.08.15 to 30.08.15 at Sri Gokulam Hospital, Salem to determine the feasibility of the study, to refine and modify the tool and to establish the sample size. Primigravida mothers at 36 weeks were selected by purposive sampling technique among which 5 in experimental and 5 in control group. After obtaining written consent from samples the demographic variables were collected. For experimental group mothers Pelvic girdle exercise taught individually for 30 minutes and instructed to do 2 times daily for a period of one week and a logbook was given to record the exercise performed in their home. For control group mothers no intervention was given. Tool was feasible and samples were easily followed the instruction and co operated well. The researcher did not find any difficulty during pilot study. Hence, it was continued in the main study data collection.

Method of data collection:

Ethical considerations:

Written permission was obtained from the Managing Director of Sri Gokulam Hospital and Salem Polyclinic, Salem and written consent was obtained from primigravida mothers those who were willing to participate in the study.

Data collection period:

Data was collected over a period of 4 weeks from 31.08.15 to 27.09.15.

Data collection procedure:

The investigator obtained written permission from the head of the institution. The period of data collection was 4 weeks. Samples were selected based on inclusion

criteria by using purposive sampling technique. Samples were assigned in two groups as experimental group (n=30) and control group (n=30). After getting written consent from the primigravida mothers the demographic variables were collected. Modified Pelvic Girdle Questionnaire was used to assess the level of Pelvic Girdle Pain and Patient Specific Functional Scale was used to assess the specific activities.

The investigator demonstrated the Pelvic girdle exercise for 3-5 primigravida mothers for 30 minutes. After demonstration the mothers were instructed to redemonstrate the exercise and the investigator checked their performance, and also insisted to perform this exercise program 2 times daily for a period of 2 weeks and a logbook was given to record the exercise were performed in their home. Along with this samples in Experimental group received a pamphlet which contains Pelvic girdle exercise. Contact numbers of samples were collected for follow up. All the samples were instructed to come at the end of 1st and 2nd week of their antenatal visit after implementation of Pelvic girdle exercise and the post test was conducted by using same tools to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities.

Plan for data analysis:

A master coding sheet was prepared and the data analysis were done by using both descriptive and inferential statistics.

- Descriptive statistics such as frequency, mean, standard deviation and mean percentage were used to assess the level of Pelvic Girdle Pain and specific activities.
- Inferential statistics such as paired 't'test was used to assess the pre and post test scores of Pelvic Girdle Pain and specific activities among experimental and control group.

- Independent ‘t’ test was used to assess the effectiveness of Pelvic girdle exercise between experimental and control group.
- Chi-square test was used to associate the pre and post test scores with the demographic variables among experimental and control group.
- Karl’ Pearson correlation was used to assess the correlation between post test scores of Pelvic Girdle Pain and specific activities among both groups.

Summary:

This chapter deals with the methodology of the study. It consists of research approach, research design, population, setting, sampling, variables, description of the tool, validity and reliability, pilot study, method of data collection and plan for data analysis.

CHAPTER –IV

DATA ANALYSIS AND INTERPRETATION

Statistics are aggregates of facts, affected to a marked extent by multiplicity of causes, numerically expressed, enumerated or estimated according to reasonable standards of accuracy, collected by systematic manner for a predetermined purpose and placed in relation to each other **(Aggarwal, 2010)**.

The statistical analysis is a method of rendering quantitative information and elicits meaningful and intelligible form of research data **(Polit and Hungler, 2003)**.

This chapter deals with analysis and interpretation of data collected to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain among primigravida mothers. The purpose of the analysis is to reduce the data to a manageable and interpretable form, so that the research problem can be suited and tested.

The data was collected through Demographic variables, Modified Pelvic Girdle Questionnaire and Patient Specific Functional Scale which was analyzed by using descriptive and inferential statistics.

Data Analysis:

The data was analyzed by using descriptive and inferential statistics.

Section –A:

a) Identify the primigravida mothers with Pelvic Girdle Pain of both experimental and control group.
b) Distribution of primigravida mothers according to their demographic variables in experimental and control group.

Section –B:

a) Distribution of experimental and control group primigravida mothers according to their level of Pelvic Girdle Pain before and after implementation of Pelvic girdle exercise.
b) Distribution of experimental and control group primigravida mothers according to their specific activities.

Section –C:

a) Comparison of Mean, SD and Mean difference of Pre and Post test scores on Pelvic Girdle Pain among primigravida mothers in both experimental and control group.
b) Comparison of Mean, SD and Mean difference of Pre and Post test scores on specific activities among primigravida mothers in both experimental and control group.

Section-D: Hypothesis testing

a) Assess the Effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain among primigravida mothers in experimental and control group.
b) Assess the Effectiveness of Pelvic girdle Exercise on specific activities among primigravida mothers in experimental and control group.
c) Comparison of post test scores on Pelvic Girdle Pain and specific activities between primigravida mothers in experimental and control group.
d) Association of pre test scores on Pelvic Girdle Pain and specific activities with demographic variables of both experimental and control group mothers.
e) Association of post test scores on Pelvic Girdle Pain and specific activities with demographic variables of both experimental and control group mothers.
f) Correlation of post test scores on Pelvic Girdle Pain and specific activities among mothers in experimental and control group.

SECTION-A

a) Identify the primigravida mothers with Pelvic Girdle Pain of both experimental and control group.

Table -4.1:

Primigravida mothers with Pelvic Girdle Pain of both experimental and control group.

GROUPS	With PGP		Without PGP		Total
	f	%	f	%	
Experimental Group	30	42%	42	58%	72

Control Group	30	44%	38	56%	68

In experimental group setting out of 72 primigravida mothers 30 mothers were eligible for the inclusion criteria, so I have selected 30 mothers were a sample for experimental group.

In control group setting out of 68 primigravida mothers 30 mothers were eligible for the inclusion criteria, so I have selected 30 mothers were a sample for control group.

b) Distribution of primigravida mothers according to their demographic variables in experimental and control group.

Table-4.2

Distribution of primigravida mothers according to their demographic variables in experimental and control group. n=60

S.No	Demographic variables	Experimental group (n=30)		Control group (n=30)	
		Frequency	%	Frequency	%
1.	**Age of the mother in years**				
	a) 18-21	2	7	5	17
	b) 22-25	18	60	18	60
	c) 26-30	9	30	6	20

	d) 31-34	1	3	1	3
2.	**Educational Status**				
	a) No formal Education	-	-	-	-
	b) Primary Education	2	7	3	10
	c) Secondary Education	2	7	2	7
	d) Higher Secondary Education	8	27	10	33
	e) Diploma	7	23	10	33
	f) Graduate	11	36	5	17
3.	**Occupation**				
	a) Housewife	19	64	21	70
	b) Daily wages	-	-	-	-
	c) Government employee	1	3	1	3
	d) Private employee	10	33	8	27
	e) Self employee	-	-	-	-
4.	**Type of Work :**				
	a) Mild Work	4	13	4	13
	b) Moderate Work	25	84	25	84
	c)Heavy Work	1	3	1	3
5.	**Income of the Family (per month)**				
	a) Rs.< 5,001	-	-	-	-
	b) Rs. 5,001-10,000	9	30	9	30
	c) Rs. 10,001-20,000	16	53	21	70
	d) Rs. > 20,000	5	17	-	-
6.	**Type of Family**				
	a) Joint family	16	53	16	53
	b) Nuclear family	14	47	14	47
	c) Extended family	-	-	-	-
7.	**Religion**				
	a) Hindu	29	97	28	94
	b) Christian	-	-	1	3
	c) Muslim	1	3	1	3
	d) Other	-	-	-	-
8.	**Previous use of oral contraceptives**				

	a) Yes	-	-	-	-
	b) No	30	100	30	100
9.	**Receiving any treatment for pelvic girdle pain**				
	a) Yes	-	-	-	-
	b) No	30	100	30	100
10.	**Practicing antenatal exercise regularly?**				
	a) Yes	2	6	1	3
	b) No	28	94	29	97

Age wise distribution shows that in both experimental and control group mothers had highest percentage (60%) in the age group of 22-25 years and the lowest percentage (3%) of them were in the age group of 31-34 years. In experimental group 30% of mothers were in the age group of 26-30 years & only 7% of mothers were in the age group of 18-21 years whereas in control group 20% of mothers belongs to the age group of 26-30 years and 17% of them were in the age group of 18-21 years.

In experimental group the highest percentage (36%) of mothers were graduate, 27% completed higher secondary education, 23% of mothers completed diploma and only 7% had completed both primary and secondary education respectively. Whereas in control group the highest percentage of mothers (33%) have completed both higher secondary education and diploma respectively. 17% completed their graduation and 10% completed primary education. Very less percentage (7%) were completed secondary education.

The highest percentage of both experimental (64%) and control group mothers (70%) were housewife, more (or) less similar percentage (33% & 27%) were private employees and only 3% of mother was in government employee for both the groups respectively.

Majority of the mothers 84% were moderate workers, 13% of mothers were mild worker and only 3% of mothers were doing heavy work in both the experimental and control group respectively.

In experimental group the highest percentage (53%) of mothers belong to the family income of Rs.10001-20000 and 17% mothers belong to family income of Rs.>20,000. Whereas in control group almost 70% of mothers were having family income of Rs.10001-20000. Similar percentage (30%) of mothers belong to family income of Rs.5001-10000 in both experimental and control group

Most of the mothers (53%) in experimental and control group belong to joint family and 47% were belongs to nuclear family. None of them were in extended family.

Almost all the mother (97%) in the experimental group were Hindu and only one mother (3%) was a Christian. Whereas in control group the maximum percentage (94%) of mothers were belong to Hindu and less percentage (3%) of mothers were in both Christian and Muslim religion respectively.

In both experimental and control group none of them used oral contraceptives and also not received any treatment of Pelvic Girdle Pain.

In both experimental and control group the maximum percentage (94%, 97%) of mothers were not practicing any antenatal exercises and only lowest percentage (6%, 3%) of them were practicing antenatal exercise regularly.

SECTION –B

a) Distribution of experimental and control group primigravida mothers according to their level of Pelvic Girdle Pain before and after implementation of Pelvic girdle exercise.

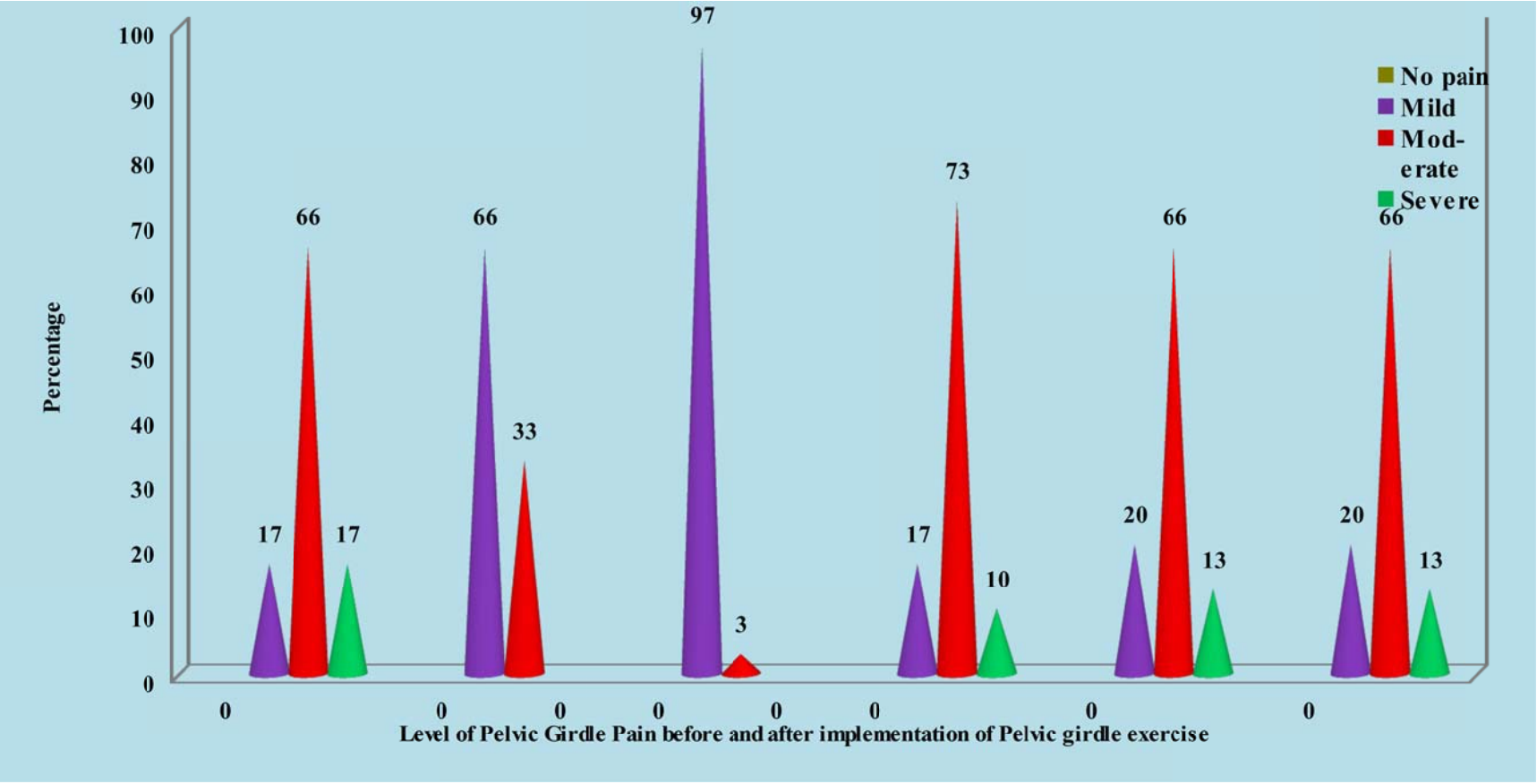

Figure-4.1: Diagram shows primigravida mothers according to their level of Pelvic Girdle Pain before and after implementation of pelvic girdle exercise.

Distribution of experimental and control group primigravida mothers according to their level of Pelvic Girdle Pain before and after implementation of Pelvic girdle exercise shows that in pretest the highest percentage of mothers had moderate pain in both experimental and control group (66% & 73%) respectively. Similar percentage (17%) of mothers in both groups had mild pain and only 10% of control group had severe pain where as it was 17% for the experimental group mothers. It shows both group of mothers had moderate pain in pre test assessment.

In post test it shows, the experimental group mothers had highest percentage on mild pain in both post test- I (66%) and post test – II (97%) and lowest percentage of mothers had moderate pain in both post test – I (33%) and post test -II (3%) respectively. Whereas in control group the highest percentage of mothers had moderate pain (66%) in both post test – I and post test – II and lowest percentage of mothers (20% & 13%) had mild pain and severe pain respectively. It shows that the experimental group mothers had reduction in Pelvic Girdle Pain after implementation of Pelvic girdle exercises but there was no reduction of Pelvic Girdle Pain among control group mothers. It shows demonstration on Pelvic girdle exercise was effective among experimental group mothers.

b) Distribution of primigravida mothers of experimental and control group according to their Specific activities.

Table -4.3:

Distribution of primigravida mothers of experimental and control group according to their Specific activities. n=60

Activity	Experimental group		Control group	
	f	%	f	%
Bending	22	73	21	70
Rolling over in bed	20	67	12	40
Squatting	14	47	13	43
Lying on the floor	13	43	10	33
Sitting and getting up from the floor	12	40	12	40
Prolonged walking	3	10	5	17
Prolonged standing	7	23	12	40
Lifting heavy objects	7	23	3	10
Climbing stairs	6	20	2	7
Walking	4	13	6	20
Getting out of bed	4	13	2	7
Prolonged sitting	3	10	5	17

Distribution of primigravida mothers of experimental and control group according to their specific activities shows that the highest percentage of mothers in both experimental (73%) and control group (70%) had difficulty in bending activity. More (or) less similar percentage of both experimental and control group mothers had difficulty in squatting (47% & 43%), lying on the floor (43% & 33%) and sitting and getting up from the floor (40% & 40%). Less than 20% of both experimental and control group mothers had difficulty in prolonged walking (10% & 17%), climbing stairs (20% & 7%), walking (13% & 20%), getting out of bed (13% &7%), and prolonged sitting (10% & 17%).

Section-C

a) Comparison of Mean, SD and Mean percentage of pre and post test scores on Pelvic Girdle Pain among primigravida mothers in both experimental and control group.

Table -4.4:

Comparison of Mean, SD and Mean percentage of pre and post test scores on Pelvic Girdle Pain among primigravida mothers in both experimental and control group. n=60

Primigravida Mothers	Pre test			Post test – I			Post test – II		
	Mean	SD	Mean %	Mean	SD	Mean %	Mean	SD	Mean %
Experimental Group (n=30)	35.30	12.13	47.06	22.33	7.31	29.77	12.83	5.33	17.10
Control Group (n=30)	34.03	12.62	45.37	35.53	12.33	47.37	37.4	12.46	49.86

Comparison of Mean, SD and Mean percentage of Pre and Post test scores on Pelvic Girdle Pain among primigravida mothers in both experimental and control group shows that in experimental group the pretest mean score was 35.30±12.33 and mean percentage was 47.06 where as in post test-I it was 22.33±7.31 and 29.77 in post test-II it was 12.83±5.33 and 17.10. The difference in mean score from pre test to post test it was 12.97 in post test-I & 22.47 in post test-II respectively which shows that reduction in level of Pelvic Girdle Pain in post test.

In control group the pretest mean score was 34.03±12.62 and mean percentage was 45.37 where as in post test-I it was 35.53±12.33 and 47.37 and post test-II it was 37.4±12.46 and 49.86. The difference in mean score from pre test to post test it was 1.5 in post test-I & 3.37 in post test-II respectively, which shows that no significant

difference in the level of Pelvic Girdle Pain from pre test to post test-I & post test-II. Hence it reveals that the primigravida mothers in experimental group had reduction in Pelvic Girdle Pain compare to control group after implementation of Pelvic girdle exercise.

b) Comparison of Mean, SD and Mean percentage of Pre and Post test scores on specific activities among primigravida mothers in both experimental and control group.

Table -4.5:

Comparison of Mean, SD and Mean percentage of Pre and Post test scores on specific activities among primigravida mothers in both experimental and control group. n=60

Primigravida mothers	Pre test			Post test – I			Post test – II		
	Mean	SD	Mean %	Mean	SD	Mean %	Mean	SD	Mean %
Experimental Group (n_1=30)	3.02	1.15	30.2	4.36	0.90	43.6	6.30	0.78	63.0
Control Group (n_2=30)	3.62	0.98	36.2	3.66	1.01	36.6	3.38	0.97	33.8

Comparison of Mean, SD and Mean percentage of Pre and Post test scores on specific activities among primigravida mothers in both experimental and control group shows that in experimental group the pretest mean score was 3.02±1.15 and mean percentage was 30, where as in post test-I the mean score was 43.6± 0.9 which was 43 in post test-II it was 6.30±0.78 which was 63. The difference in mean score from pre test to post test I & II it was 1.34 in post test-I & 3.28 in post test-II respectively which shows that improvement in specific activities in post test.

In control group the pretest mean score was 3.62±0.98 which was 36.2 where as in post test-I the mean score was 3.66±1.01 which was 36 and in post test-II it was 3.38±0.97 which was 33. The difference in mean score from pre test to post test I & II, it was 1.01 in post test-I & 0.24 in post test-II respectively which shows that no significant difference in the level of specific activities.

Hence it reveals that the primigravida mothers in experimental group had improvement in specific activities compare to control group after implementation of Pelvic girdle exercise.

SECTION –D

Hypothesis testing

a) Assess the Effectiveness of pelvic girdle exercise on Pelvic Girdle Pain among primigravida mothers in experimental and control group.

H_1: There is a significant difference between pre and post test scores on Pelvic Girdle Pain among primigravida mothers of Experimental and control group at $p \leq 0.05$ level.

Table- 4.6:

Comparison of Mean, standard deviation and 't' value on level of Pelvic Girdle Pain among primigravida mothers in experimental and control group.

$n_1=30$, $n_2=30$

Primigravida Mothers	Pre test		Post test – I			Post test – II		
	Mean	SD	Mean	SD	't' Value	Mean	SD	't' Value
Experimental Group ($n_1=30$)	35.30	12.13	22.33	7.31	**11.98***	12.83	5.33	**12.08***
Control Group ($n_2=30$)	34.03	12.62	35.53	12.33	2.47	37.4	12.46	2.15

***Significant at p≤ 0.05 level; table value=2.045;df=29**

Comparison of mean, standard deviation and 't' value on Pelvic Girdle Pain reveals that in pretest the experimental group mothers had mean score of 35.30±12.13 where as in post test I & II mean score was 22.33± 7.31 & 12.83± 5.33. The calculated 't' values were 11.98 in post test –I & 12.08 in post test-II which was highly significant at $p \leq 0.05$ level.

In control group the pretest mean score was 34.03±12.62, where as in post test I & II mean score was 35.53±12.33 & 37.4±12.46. The calculated 't' values were 2.47 in post test-I &2.15 in post test-II which was not significant at $p \leq 0.05$ level. Hence it concludes that H_1 was retained at $P \leq 0.05$ level.

b) Assess the Effectiveness of Pelvic girdle exercise on specific activities among primigravida mothers in experimental and control group.

H_2: There is a significant difference between pre and post test scores of specific activities among primigravida mothers of Experimental and control group at $p \leq 0.05$ level.

Table-4.7:

Comparison of Mean, standard deviation and 't' value on specific activities among primigravida mothers in experimental and control group.

$n_1 = 30$, $n_2 = 30$

Groups	Pre test		Post test – I			Post test – II		
	Mean	**SD**	**Mean**	**SD**	**'t' Value**	**Mean**	**SD**	**'t' Value**
Experimental Group (n=30)	3.02	1.15	4.36	0.90	**11.19***	6.30	0.78	**21.88***
Control Group (n=30)	3.62	0.98	3.66	1.01	0.38	3.38	0.97	1.79

***Significant at p≤ 0.05 level; table value=2.045;df=29**

Comparison of mean, standard deviation and 't' value on specific activities shows that in pretest the experimental group mothers had mean score of 3.02±1.15 where as in post test I & II mean score was 4.36±0.90 & 6.30±0.78. The calculated 't' values were 11.19 in post test-I & 21.88 in post test-II which was highly significant at P≤ 0.05 level.

In control group the pretest mean score was 3.62±0.98, whereas in post test I & II mean score was 3.66 ±1.01 and 3.38±0.97. The calculated 't' values were 0.38 in post test-I& 1.79 in post test –II which was not significant at P≤ 0.05 level. Hence H_2 was retained at P≤ 0.05 level.

c) Comparison of post test scores and 't' value on Pelvic Girdle Pain and specific activities among primigravida mothers in experimental and control group.

H_3: There is a significant difference between post-test score on Pelvic Girdle Pain and specific activities among primi gravida mothers of experimental and control group at p≤ 0.05 level.

Table-4.8:

Comparison of mean standard deviation and 't' value on post test scores between primigravida mothers in experimental and control group.

$n_1 = 30$, $n_2 = 30$

Variable	Experimental Group (n=30)		Control Group (n=30)		't' Value (independent 't' test)
	Post test		Post test		
	Mean	SD	Mean	SD	
Pelvic Girdle Pain	12.83	5.33	37.40	12.46	**9.92***
Functional Ability	6.30	0.78	3.38	0.97	**2.92***

***Significant at p≤ 0.05 level; table value=2.01;df=58**

The comparison of post test scores and 't' value on Pelvic Girdle Pain between experimental and control group mothers shows that the mean score was 12.83±5.33 & 37.40±12.46 respectively. The calculated 't' value was 9.92 which was significant at p≤0.05 level which reveals that Pelvic girdle exercise was effective on reduction of Pelvic Girdle Pain.

The comparison of post test score and 't' value on specific activities among experimental and control group shows that the mean score was 6.30±0.78 and 3.38±0.97 respectively. The calculated 't' value is 2.92 which was significant at p≤0.05 level. It shows improvement in specific activities. Hence H_3 was retained at p≤0.05 level.

d) Association of pre test scores on Pelvic Girdle Pain and specific activities among mothers with demographic variables in experimental and control group.

H_4: There is a significant association between pre test scores of Pelvic Girdle Pain and specific activities with demographic variables at $p \leq 0.05$ level.

Table-4.9:

Association of pretest scores on Pelvic Girdle Pain and specific activities with demographic variables among mothers in experimental and control group. **n=60**

Demographic Variables	Pelvic Girdle Pain						Specific activities					
	Experimental Group			Control Group			Experimental Group			Control Group		
	χ^2	Table Value	df	χ^2	Table Value	df	χ^2	Table Value	df	χ^2	Table Value	df
Age in years	10.33	12.59	6	11.81	12.59	6	0.97	7.81	3	3.67	7.81	3
Educational status	6.83	15.50	8	6.07	15.50	8	3.16	9.48	4	3.41	9.48	4
Occupation	5.90	9.49	4	6.34	9.49	4	0.69	5.99	2	0.62	5.99	2
Type of work	0.73	9.49	4	6.69	9.49	4	0.34	5.99	2	0.07	5.99	2
Income of the family	3.03	9.49	4	2.71	9.49	4	0.90	3.84	1	1.04	3.84	1
Type of family	2.68	5.99	2	2.20	5.99	2	0.90	3.84	1	0.52	3.84	1
Religion	1.67	9.49	4	0.80	9.49	4	1.14	5.99	2	1.31	5.99	2
Practice of antenatal exercise	1.87	5.99	2	0.38	5.99	2	1.27	5.99	2	0.92	3.84	1

Not Significant at $p \leq 0.05$ level

There was no significant association between demographic variables & pre test scores of Pelvic Girdle Pain and specific activities among mothers of both experimental and control group. Hence it can be interpreted that the difference in mean score of pre test related to the demographic variables were not true difference and only by chance the research hypothesis $H_4$was rejected at $p \geq 0.05$ level.

e) Association of post test scores on Pelvic Girdle Pain and specific activities with demographic variables among mothers in experimental and control group.

H_5: There is a significant association between Pelvic Girdle Pain and specific activities with demographic variables among mothers in both groups at $p \leq 0.05$ level.

Table -4.10:

Association of post test scores on Pelvic Girdle Pain and specific activities with demographic variables among mothers in experimental and control group. n=60

Demographic Variables	Pelvic Girdle Pain						Specific activities					
	Experimental Group (n_1=30)			Control Group (n_2=30)			Experimental Group (n_1=30)			Control Group (n_2=30)		
	χ^2	Table Value	df	χ^2	Table Value	df	χ^2	Table Value	df	χ^2	Table Value	df
Age in years	2.84	7.81	3	8.66	12.59	6	2.48	7.81	3	4.27	7.81	3
Educational status	4.14	9.48	4	5.27	15.50	8	3.05	9.48	4	5.26	9.48	4
Occupation	0.60	5.99	2	4.34	9.48	4	1.21	5.99	2	1.06	5.99	2
Type of work	0.21	5.99	2	11.57	9.48	4	0.42	3.84	1	3.28	5.99	2
Income of the family	2.41	5.99	2	0.08	5.99	2	1.87	5.99	2	2.47	5.99	2
Type of family	0.90	3.84	1	5.36	5.99	2	0.00	3.84	1	0.92	3.84	1
Religion	0.11	5.99	2	1.07	9.48	4	0.53	5.99	2	1.84	5.99	2
Practice of antenatal exercise	0.07	3.84	1	0.52	5.99	2	0.15	3.84	1	1.34	3.84	1

Not Significant at $p \leq 0.05$ level

The above table represents that there is no significant association between demographic variables and post test II scores Pelvic Girdle Pain and specific activities among mothers in both experimental and control group. Hence $\mathbf{H_5}$ is rejected at $p \geq 0.05$ level.

f) Correlation between post test scores of Pelvic Girdle Pain and specific activitiesof both experimental and control group mothers.

H_6: There is a significant correlation between post test scores of Pelvic Girdle Pain and specific activities of both experimental and control group mothers at $p \leq 0.05$ level.

Table-4.11:

Correlation (Karl Pearson correlation) between post test scores of Pelvic Girdle Pain and specific activities of both experimental and control group mothers.

Variable	Experimental Group (n_1=30)			Control Group (n_2=30)		
	Mean	**SD**	**'r' Value**	**Mean**	**SD**	**'r' Value**
Pelvic Girdle Pain	12.83	5.33		37.40	12.46	
Functional Ability	6.30	0.78	**-0.6**	3.38	0.97	**1.70**

*** Significant at p≤ 0.05 level**

Correlation between post test scores of Pelvic Girdle Pain and specific activities among mothers shows that in experimental group there was negative correlation and the calculated 'r' value was -0.6 which was significant at p≤ 0.05 level. In control group there was positive correlation and the calculated 'r ' value was 1.70 which was significant at p≤0.05 level. Hence H_6 was retained.

Summary

This chapter dealt with data analysis and interpretation in the form of statistical values based on the objectives. Frequency, mean, standard deviation and mean percentage used to assess Pelvic Girdle Pain and specific activities. The 't' test is used to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and

specific activities among primigravida mothers. The chi-square test is used to find out the association between scores of Pelvic Girdle Pain and specific activities with the demographic variables. The Karl-Pearson correlation used to find out the correlation between Pelvic Girdle Pain and specific activities among primigravida mothers of both groups.

CHAPTER –V

DISCUSSION

The present study was conducted to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities among primigravida mothers attended in antenatal OPD at selected hospitals, Salem.

Description of the demographic variables:

- In both experimental and control group mothers had highest percentage (60%) in the age group of 22-25 years and the lowest percentage (3%) of them were in the age group of 31-34 years. In experimental group 30% of mothers were in the age group of 26-30 years & only 7%(2) of mothers were in the age group of 18-21 years. Whereas in control group 20% of mothers belongs to the age group of 26-30 years and 17% of them were in the age group of 18-21 years. These finding was supported by **Heather Pierce (2010) & Arathi, (2015)** who also observed from their study that highest percentage (37%) of mothers were in the age group of 25-29 years, similar findings from **Kulge et.al., (2011)** stated that the maximum no of mothers participated were in the age group of 27-29 years.
- In experimental group the highest percentage (36%) of mothers were graduate, 27% completed higher secondary education, 23% of mothers completed diploma and only 7% were completed both primary and secondary education respectively. Whereas in control group the highest percentage of mothers (33%) were completed both higher secondary education and diploma respectively. 17%completed their graduation, 10% completed primary education and only 7% were completed secondary education.
- Majority of the mothers (84%) were moderate workers, 13% of mothers were mild worker and only 3% of mothers were doing heavy work in both the experimental and control group respectively.
- The highest percentage of both experimental (64%) and control group mothers (70%) were in housewife, more (or) less similar percentage (33% & 27%) were private employees and only 3% of mother was in government employee for both the groups respectively. These finding were supported by **Heather Pierce (2010),** in his study 55% of mothers were housewife. The similar

finding consistent with the **Emily.R, (2006)** also reported that in her study majority (43%) of mothers were housewife.

- Majority of the mothers 84% were moderate workers, 13% of mothers were mild worker and only 3% of mothers were doing heavy work in both the experimental and control group respectively
- In experimental group the highest percentage (53%) of mothers were belongs to the family income of Rs. 10001-20000 and 17% mothers were belongs to family income of Rs. > 20,000 whereas in control group almost 70% of mothers were having family income of Rs. 10001-20000 and similar percentage 30% of mothers were belong to family income of Rs. 5001-10000 in both experimental and control group.
- In both experimental and control group the highest percentage (53%)of mothers belong to joint family. This finding is consistent with the study by **Heather Pierce, (2010)** who reported that in her study 68% of women had support persons at home to do house hold activities as well as to take care of their children.
- Almost all the mother (97%) in the experimental group were Hindus and only one mother (3%) was Christian. Whereas in control group the maximum percentage (94%) of mothers were belong to Hindus and less percentage (3%) of mothers were in both Christian and Muslim religion respectively. These finding was supported by **Heather Pierce, (2010)** in her study stated that cultural background is not associated with onset and intensity of pain.
- In both experimental and control group none of them received any treatment for Pelvic Girdle Pain which was supported by a study conducted by **Dilpledge, (2005)** reported that 50% of women not received any treatment for pelvic girdle pain. The similar findings 71% of experimental group mothers and 66% of control group mothers not received any treatment for pelvic girdle pain was observed by **Annelie, (2006)**.

- In both experimental and control group maximum percentage of mothers (94%,97%) were not practicing any antenatal exercise. **Emily. R, (2006)** also reported in their study that 50% of mothers were not practiced any antenatal exercise.

Objective-1: To assess the level of Pelvic Girdle Pain and specific activities among primi gravida mothers in both experimental and control group.

Distribution of experimental and control group primigravida mothers according to their level of Pelvic Girdle Pain before implementation of Pelvic girdle exercise shows that 66% of experimental group mothers and 73% of control group mothers had moderate pain, 17% of both groups obtained mild pain and 10% of control group had severe pain where as it was 17% for experimental group. The mean pain score was 35.3±12.13 and 34.03±12.67 and the mean specific activities score was 3.02±1.15 and 3.62±0.98 for both groups respectively.

This finding is consistent with the study on effectiveness of exercise, advise and pelvic support belts on the management of symphysis pubis dysfunction done by **Depledge, et.al., (2005)** observed that the mean pretest pain score for all three groups were 47.8±14.2, 43.0±21.9, 50.5±18.5 respectively and the mean Patient Specific Functional Scale score were 7.0±1.1, 6.7±1.6, 6.9±1.4 respectively.

This finding also supported by **Judith Kluge, et.al.,(2011)**who has done a study to identify the effect of specific stabilizing exercise on pain intensity and functional ability in women with pregnancy related low back pain observed that in pre test the median value of pain intensity and functional ability were 30.0 & 71.0, 31.0 & 77.5 for both experimental and control group respectively.

Objective-2: To assess the effectiveness of Pelvic Girdle Pain and specific activities among primi gravida mothers after implementation of Pelvic girdle exercise.

The mean pre-test Pelvic Girdle Pain score in experimental group was 35.30±12.13 and in post test I and II it was 22.33±7.31 and 12.83±5.33. The calculated 't' values were 11.98 in post test-I and 12.08 in post test-II which was highly significant at $p \leq 0.05$ level. The mean pretest score of specific activities for experimental group was 3.02±1.15 and in post test I and II it was 4.36±0.90 and 6.30±0.78. The 't' values were 11.19 in post test-I and 21.88 in post test-II which was highly significant at $p \leq 0.05$ level.

The mean post test score of Pelvic Girdle Pain for experimental group was 12.83± 5.33 and in control group it was 37.40 ± 12.46. The 't' value was 9.92 which was significant at $p \leq 0.05$ level. The mean post test score of specific activities for experimental group was 6.30±0.78 and in control group was 3.38±0.97. The 't' value was 2.92 which was significant at $p \leq 0.05$ level.

Kluge, et.al., (2011) also reported in his study on effectiveness of specific stabilizing exercise in women with pregnancy related low back pain at South Africa , functional disability was reduced from 71.0 to 39.5 ($p=0.29$) and the level of pain was reduced from 30.0 to 18.5 ($p<0.01$).

Hence it was proved that Pelvic girdle exercise was effective in reducing Pelvic Girdle Pain and improving specific activities among mothers in experimental group.

Objective-3: Association between the pre and post test scores with demographic variables among primigravida mothers of both experimental and control group.

There was no significant association found in Pre and post-test scores of Pelvic Girdle Pain with demographic variables such as age, educational status, type of work, religion, use of oral contraceptives and practice of antenatal exercises in both experimental and control group.

This finding was consistent with a study done by **Hilde Stendal, (2010)** on factors associated with Pelvic Girdle Pain and prevalence of Pelvic Girdle Pain during pregnancy at Norway stated that the factors such as age, parity, type of work are not associated with Pelvic Girdle Pain.

The similar finding also supported by **Heather Pierce, (2010)** in his study on prevalence of pregnancy related low back and Pelvic Girdle Pain among Australian women who concluded that age, parity, ethnicity, period of gestation, work status, regular exercise and life style variables were not associated with Pelvic Girdle Pain. This finding also supported by **Ostgaard et.al., (1991)**who has done a study on prevalence of Pregnancy related Pelvic Girdle Pain among pregnant mother at Sweden reported that use of oral contraceptives not associated with Pelvic Girdle Pain.

Objective-4: Correlation between post test scores of Pelvic Girdle Pain and specific activities among primigravida mothers of both experimental and control group.

Correlation between post test scores of Pelvic Girdle Pain and specific activities among mothers shows that in experimental group there was negative correlation and the calculated 'r' value was -0.6 which was significant at $p \leq 0.05$ level. In control group there was positive correlation the calculated 'r ' value was 1.7 which was significant at $p \leq 0.05$ level.

Summary :

The discussion made in this chapter was based on the objectives of the study and it was related with similar studies conducted by other investigators.

CHAPTER –VI

SUMMARY,CONCLUSION, IMPLICATION AND RECOMMENDATIONS

This chapter consists of four sections. In the first two sections, the summary and the implications for nursing practice were presented. In the last two sections, the recommendations for further research and conclusions are present.

Summary:

The main aim of this study is to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities among primi gravida mothers attending antenatal OPD in selected hospitals, Salem. Pre-test and post-test design

with control group was selected for this study and purposive sampling technique was adopted to recruit the samples. The conceptual framework was based on Modified Widenbach's Prescriptive Theory -A helping art of clinical nursing (1964).Tools like Demographic variables, Modified Pelvic Girdle Questionnaire, Patient Specific Functional Scale, Pamphlet on Pelvic girdle exercise were used. Data collected over a period of 4 weeks from 31.08.15 to 27.09.15.At the first two weeks pre test was conducted and the investigator demonstrated the Pelvic girdle exercise for experimental group mothers and checked their re-demonstration also insisted to perform this exercise program 2 times daily for a period of 2 weeks. At the end of 1st and 2nd week of their antenatal visit after implementation of Pelvic girdle exercise post test was conducted by using same tools to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities. Data analysis was done by using both descriptive and inferential statistics.

Major findings of the study were summarized as follows:

- Majority (60%) of mothers were in the age group of 22-25 years in both experimental and control group.
- In experimental group highest percentage (36%) of mothers were graduate. Whereas in control group the highest percentage (33%) were completed both higher secondary education and diploma respectively.
- In both experimental and control group majority of (64%), (70%) mothers were housewives.
- Almost all the mothers (84%) were moderate workers in both experimental and control group.

- In both experimental and control group highest percentage (53%,70%) of mothers were belongs to the family income of Rs.10001-20000 .
- Similar percentage mothers (53%) in experimental and control group belong to joint family.
- More (or) less all the mothers in both the experimental group (97%) and control group (94%) were belongs to Hindu religion.
- In both experimental and control group none of them used oral contraceptives and also not received any treatment of Pelvic Girdle Pain.
- Highest percentage of mothers in both experimental and control group (94%, 97%) were not practicing any antenatal exercises regularly.
- More (or) less similar percentage of mothers in both experimental and control group(73% &70%) had difficulty in bending activities, rolling over in bed (67%& 40%) squatting (47% & 43%), lying on the floor (43% & 33%) and sitting and getting up from the floor (40% & 40%).
- In pretest majority of mothers had moderate pain in both experimental and control group (66% & 73%) respectively.
- Majority of the experimental group mothers had mild pain in both post test- I (66%) and post test – II (97%), whereas majority of the control group mothers had moderate pain (66%) in both post test – I and post test – II respectively.
- In pretest the experimental group mothers had mean Pelvic Girdle Pain score of 35.30±12.13 whereas in post test I & II mean score was 22.33± 7.31 & 12.83± 5.33. The calculated 't' values were 11.98 in post test –I & 12.08 in post test-II which was highly significant at $p \leq 0.05$ level.
- In pretest the experimental group mothers had mean specific activities score of 3.02±1.15 where as in post test I & II mean score was 4.36±0.90 & 6.30±0.78. The calculated 't' values were 11.19 in post test-I & 21.88 in post test-II which was highly significant at $p \leq 0.05$ level.
- In pre-test the control group mothers had mean Pelvic Girdle Pain score of 34.03±12.62, whereas in post-test I and II the mean score was 35.53±12.33

and 37.4±12.46 the calculated 't' value were 2.47 in posttest I & 2.15 in post-test II which was not significant at p≤0.05 level.

- In pre-test the control group mothers had mean specific activities score of 3.62±0.98 whereas in post-test I & II the mean score was 3.66±1.01 and 3.38±0.97. The calculated 't' values were 0.38 in post-test –I & 1.79 in post-test – II which was not significant at P≤0.05 level.
- The comparison of post test scores and 't' value on Pelvic Girdle Pain among experimental and control group mothers shows that the mean score was 12.83±5.33 & 37.40±12.46 respectively. The calculated 't' value was 9.92 which was significant at p≤0.05.
- The comparison of post test scores and 't' value on specific activities among experimental and control group shows that the mean score was 6.30±0.78 and 3.38±0.97 respectively. The calculated 't' value is 2.92 which was significant at p≤0.05 level.
- There was no significant association between demographic variables and scores of Pelvic Girdle Pain, specific activities among primigravida mothers of both experimental and control at p≥0.05 level.
- There was a negative correlation between post test scores of Pelvic Girdle Pain and specific activities among experimental group mothers.

Conclusion:

The present study was done to assess the effectiveness of Pelvic girdle exercise on Pelvic Girdle Pain and specific activities among primigravida mothers attended in antenatal OPD at selected hospitals, Salem. The result of this study showed that, the pre-test score in experimental group, 66% of mothers had moderate pain whereas in post-test I & II (66% & 97%) of mothers had mild pain respectively. In pre-test the experimental group mothers had mean specific activities score of 3.02± 1.15 whereas in post-test I & II the mean score was 4.36±0.90 and 6.30±0.78. Hence,

it shows that there was reduction in Pelvic Girdle Pain and improvement in specific activities. Comparison of post test scores and 't' value on Pelvic Girdle Pain and specific activities among experimental and control group shows that the mean score was 12.83±5.33,37.40±12.46 and 6.30±0.78 , 3.38±0.97 respectively. Hence, it shows that there was reduction in Pelvic Girdle Pain and improvement in specific activities among experimental group mothers. In both groups the Pelvic Girdle Pain has no significant association with demographic variables and there was a negative correlation between post test scores of Pelvic Girdle Pain and specific activities among experimental group mothers. Pelvic girdle exercise reduces Pelvic Girdle Pain and improves specific activities of the mother. This exercise is easy to follow, simple to do, has no risk and effective to reduce Pelvic Girdle Pain.

IMPLICATIONS:

Nursing service:

- Pelvic girdle exercise could be adopted in hospitals and maternity centre.
- Staff development programme can be arranged for staffs working in the hospitals and maternity centre.

Nursing Education:

- Educational programme on Pelvic Girdle Pain and Pelvic girdle exercise can be included in subject content.
- Alternative pain relief management can be included in nursing curriculum.

Nursing Administration:

- The Nurse administrator can organize in service education programme regarding Pelvic girdle exercise for staff nurses.
- The Nurse administrator can implement and motivate the midwives to practice pelvic girdle exercise in the antenatal outpatient department.

Nursing research:

- Nursing research can be conducted to find out effectiveness of various alternative therapies for Pelvic Girdle Pain.
- Nursing research can be conducted to find out knowledge among midwives and student nurses regarding Pelvic girdle exercise.

Recommendations for further research:

- A similar study can be conducted to assess the effectiveness of Pelvic girdle exercise among multiparous women.
- A similar study can be conducted to assess the effectiveness of Pelvic girdle exercise in the I and II and trimester of pregnancy.
- A comparative study can be done to determine the effectiveness of Pelvic girdle exercise among primi and multi gravida mothers.
- A longitudinal study can be done to determine the effectiveness of pelvic girdle exercise.
- A similar study can be done to compare the effectiveness of other alternative modalities on Pelvic Girdle Pain.

Summary:

This chapter deals with summary, conclusion, implications, and recommendation.

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ANNEXURE – I

LETTER SEEKING PERMISSION TO CONDUCT A RESEARCH STUDY

From

Mrs. Sathya. J,

II Year M.Sc., (N),

Sri Gokulam College of Nursing,

Salem, Tamil Nadu.

To

The Principal,

Sri Gokulam College of Nursing,

Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project - request- reg.

I, **Mrs.Sathya.J,** II Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is conducting a research project in partial fulfillment of "The Tamil Nadu Dr. M.G.R. Medical University, Chennai" as a part of the requirement for the award of M.Sc. (Nursing) Degree.

Topic: "A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected hospitals, Salem".

I wish to seek the administrative permission to conduct the research study at Sri Gokulam Hospital & Salem Polyclinic Hospital, Salem.

Kindly do the needful.

Thanking you.

Date : Yours sincerely,

Place : Salem

(Mrs.Sathya.J)

ANNEXURE – II

LETTER GRANTING PERMISSION TO CONDUCT A RESEARCH STUDY

SRI GOKULAM COLLEGE OF NURSING
3/836, Periyakalam, Neikkarapatti, Salem - 636 010.
Phone : 0427 - 6544550, 2272240, 2272250 Fax : 0427 - 2270200, 2447077
Email : sgcon2001@yahoo.com, sgcon2001@gmail.com

LETTER SEEKING PERMISSION TO CONDUCT A RESEARCH STUDY

To,

The Managing Director,

Sri Gokulam Hospital,

Salem.

Respected Sir,

Sub: Permission to conduct a research study request – reg.

This is to introduce **Mrs. Sathya.J,** Final Year M.Sc.,(Nursing) student of our college. She is to conduct research project which is to submitted to **"The Tamilnadu Dr. M.G.R. Medical University, Chennai"** in partial fulfillment of University requirement for the award of M.Sc., (Nursing) Degree.

Topic: A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected hospitals, Salem

I request you to kindly permit her to conduct the study in our esteemed hospital from 24.08.2015 to 26.09.2015. She will adhere to the hospital policies and regulations.

Kindly do the needful.

Thanking you,

Date:

Place: salem

Yours sincerely,

(Dr.K.Tamizharasi)

SRI GOKULAM COLLEGE OF NURSING
3/836, Periyakalam, Neikkarapatti, Salem - 636 010.
Phone : 0427 - 6544550, 2272240, 2272250 Fax : 0427 - 2270200, 2447077
Email : sgcon2001@yahoo.com, sgcon2001@gmail.com

LETTER SEEKING PERMISSION TO CONDUCT A RESEARCH STUDY

To

Dr. Resmi Rao., M.B.B.S,M.D.,D.G.O,

Salem Polyclinic,

Salem.

Respected Madam,

Sub: Permission to conduct a research study request – reg.

This is to introduce **Mrs. Sathya.J,** Final Year M.Sc (Nursing) student of our college.. She is to conduct research project which is to submitted to **"The Tamilnadu Dr. M.G.R. Medical University, Chennai"** in partial fulfillment of University requirement for the award of M.Sc., (Nursing) Degree.

Topic: A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected hospitals, Salem.

I request you to kindly permit her to conduct the study in your esteemed hospital from 24.08.2015 to 26.09.2015. She will adhere to the hospital policies and regulations.

Kindly do the needful.

Thanking you,

Date :

Place : Salem

Yours sincerely,

(Dr.K.Tamizharasi)

Forwarded to Managing Trustee

6/8/15.

ANNEXURE – III

LETTER REQUESTING OPINION AND SUGGESTION OF EXPERTS FOR CONTENT VALIDITY OF THE RESEARCH TOOL

From

Mrs. Sathya. J,
II Year M.Sc., (N),
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

(Through proper channel)

Respected Sir/Madam,

Sub: Requesting opinion and suggestions of experts for establishing content validity of the tool.

I, **Mrs.Sathya. J**, final year M.Sc.(Nursing) student of Sri Gokulam college of Nursing, Salem, have selected the below mentioned statement of the problem for the research study to be submitted to The Tamilnadu Dr.M.G.R.Medical University, Chennai as partial fulfilment for the award of Master of Science in Nursing.

Topic: "A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected hospitals, Salem".

I request you to kindly validate the tools developed for the study and give your expert opinion and suggestions for necessary modifications.

Thanking you.

Date : Yours sincerely,

Place : Salem

(Mrs.Sathya. J)

Enclosed:

1. Certificate of validation
2. Criteria checklist for evaluation of tool
3. Tool for collection of data

ANNEXURE - IV

TOOL FOR DATA COLLECTION

SECTION-A

ASLR Test:(Active Straight Leg Raise Test)

This is one of the standardized test, is used to identify mothers with pelvic girdle pain. The ASLR test is used to describe the severity of pain in terms of a possible load transfer problem.

Procedure:

The ASLR test will be performed in the supine position with straight legs and the feet placed 20 cm apart.The mothers will be instructed to raise the legs one after the other, above 10-20 cm without bending the knee.

Scoring:

1.When mother is not having pain ASLR test is negative.

2.When mother is having pain ASLR test is positive

SECTION: B

Demographic variables

Instruction to the Participants

This section consists of personal information and you are requested to give your response. The data given by you will be kept confidential.

Name: Sample No: [ ]

Phone No: Date:

AN visit:

DEMOGRAPHIC DATA: -

1**. Age of the mother in years**

a) 18-21 [ ]

b) 22-25 [ ]

c) 26-30 [ ]

d) 31-34 [ ]

2. Educational Status

a) No formal Education [ ]

b) Primary Education [ ]

c) Secondary Education [ ]

d) Higher Secondary Education [ ]

e) Diploma [ ]

f) Graduate [ ]

3. Occupation

a) Housewife [ ]

b) Daily wages [ ]

c) Government employee [ ]

d) Private employee [ ]

e) Self employee [ ]

4. Type of Work :

a) Mild Work [ ]

b) Moderate Work [ ]

c) Heavy Work [ ]

5. Income of the Family

a) Rs.< 5,001 [ ]

b) Rs. 5,001-10,000 [ ]

c) Rs. 10,001-20,000 [ ]

d) Rs. > 20,000 [ ]

6. Type of Family

a) Joint family [ ]

b) Nuclear family [ ]

c) Extended family [ ]

7. Religion

a) Hindu [ ]

b) Christian [ ]

c) Muslim [ ]

d) Any other ? _____

8. Previous use of oral contraceptives,

a) Yes [ ]

b) No [ ]

If yes, how long it has been used? _____

9. Are you receiving any treatment for pelvic girdle pain ?

a) Yes [ ]

b) No [ ]

If yes specify _____

10. Are you practicing antenatal exercise regularly?

a) Yes [ ]

b) No [ ]

SECTION C

(A) MODIFIED PELVIC GIRDLE QUESTIONNAIRE

How problematic is it for you because of your pelvic girdle pain?	Not at all (0)	To small extent (1)	To some extent (2)	To large extent (3)
1. Dress byself				
2. Stand for less than 10 minutes				
3. Stand for more than 60 minutes				
4. Bend down				
5. Sit for less than 10 minutes				
6. Sit for more than 60 Minutes				
7. Walk for less than 10 minutes				
8. Walk for more than 60 minutes				
9. Climb stairs				
10. Do housework				
11. Carry light objects				
12. Carry heavy objects				
13. Get up / sit down				
14. Squat for Toilet purpose				
15. Lie down				
16. Roll over in bed				
17. Having a normal sex life				

How much pain do you experience :	None	Some	moderate	Consider-able
1. After get out of the bed. 2. Morning to Afternoon 3. In the afternoon				

4. In the evening 5. At bed time				
To what extent interruption of activities due to your pelvic girdle pain	**Not at all**	**To small extent**	**To some extent**	**To large extent**
6. Dragging your legs tediously.				
7. Doing things more slowly.				
8. Sleeping interrupted.				

SCORING PROCEDURE:

Score		Level of pain
0	-	No Pain
1-25	-	Mild pain
26-50	-	Moderate pain
51-75	-	Severe pain

(B) Patient-Specific Functional Scale

Instruction to the participants:

List out the activities which you feel more difficult to do and give your score for that on a scale which is shown to you.

Sl. No	**Activities**	**Date**	**Initial assessment**	**Follow up assessment**	
				7th day	**15th day**

1.				
2.				
3.				
4.				
5.				

Total score = sum of the activity scores/number of activities

Minimum detectable change (90%CI) for average score =2 Points

Minimum detectable change (90%CI) for single activity score = 3 Points

Patient-specific activity scoring scheme (Point to one number):

0 1 2 3 4 5 6 7 8 9 10

Unable to perform activity

Able to perform activity at the same level as before pelvic girdle pain

EXERCISE LOG

NAME:_____ SAMPLE NO : _____

AGE :_____ CONTACT NO : _____

S No	PELVIC GIRDLE EXERCISE (15 times each exercise for each session)	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		DATE														
1)	Abdominal Stabilization Exercise	MO														
2)	Pelvic Floor Exercise															
3)	Gluteus Maximus															

	Muscle exercise	**R N I N G**														
4)	Latissimus Dorsi Muscle exercise															
5)	Hip Abdurator Muscle Exercise															
6)	Pelvic tilting Exercise															
7)	Pelvic bridging Exercise															
1)	Abdominal Stabilization Exercise	**E V E N I N G**														
2)	Pelvic Floor Exercise															
3)	Gluteus Maximus Muscle exercise															
4)	Latissimus Dorsi Muscle exercise															
5)	Hip Abdurator Muscle Exercise															
6)	Pelvic tilting Exercise															
7)	Pelvic bridging Exercise															

gphpT - m

v.v];.vy;.Mh; ghpNrhjid

,g;ghpNrhjidapy; fUtw;wpUf;Fk; jha;khh;fs; Neuhf gLj;jepiyapy; ,Ufhy;fisAk; 20 nr.kP mfyj;jpy; itf;fNtz;Lk;. gpd;G ,Ufhy;fisAk; Kl;bia klf;fhky; xt;nthd;whf 10 - 20 nr.kP cah;j;jNtz;Lk;.

kjpg;gPL nra;Ak; Kiw:

- fhy;fis cah;j;Jk;nghOJ typ ,Ug;gpd; v.v];.vy;.Mh; ghpNrhjid ghrpl;bt;
- fhy;fis cah;j;Jk; nghOJ typ ,y;iy vdpy; v.v];.vy;.Mh; ghpNrhjid nefl;bt;.

gphpT - M

jdpegh; gw;wpa mbg;gil tpguq;fs;

md;ghh;e;j gq;Nfw;ghsh;fNs>

,g;gFjpapy; nfhLf;fg;gl;l Nfs;tpfs; cq;fspd; jdpg;gl;l tpguq;fis mwpe;J nfhs;s gad;gLj;jg;gLfpwJ. ePq;fs; mspf;Fk; tpguq;fs; gj;jpukhf ghJfhf;fg;gLk;.

ngah;: khjphp vz;:

njhlh;G vz;: Njjp:

1) jhapd; taJ (tUlq;fspy;)

m) 18 - 21

M) 22 - 25

,) 26 - 30

<) 31 - 34

2) fy;tpj;jFjp

m) Kiwahd fy;tp gapyhjth;

M) njhlf;ff;fy;tp

,) eLepiyf;fy;tp

<) Nky;epiyf;fy;tp

c) ,sepiy gl;ljhhp

C) KJepiy gl;ljhhp

3) njhopy;

m) ,y;yj;jurp

M) jpdf;$yp

,) muR Copah;

<) jdpahh; Copah;

c) Ranjhopy;

4) Ntiyapd; tif

m) ,yFthd Ntiy

M) kpjkhd Ntiy

,) fbdkhd Ntiy

5) FLk;g khj tUkhdk;

m) &.5001/-f;F fPo;

M) &.5001 - 10000

,) &.10001 - 20000

<) &.20000/- Nky;

6) FLk;g tif

m) jdpf;FLk;gk;

M) $l;Lf;FLk;gk;

,) tphpthf;fg;gl;l FLk;gk;

7) kjk;

m) ,e;J

M) fpwp];jth;

,) K];yPk;

<) kw;w kjk; …….

8) fh;g;gj;jil khj;jpiufis cgNahfpj;jJ cz;lh?

m) Mk;

M) ,y;iy

Mk; vdpy;> vt;tsT fhyk;? (ehl;fs;/ khjq;fs;/ tUlq;fs;)

9) cq;fs; ,Lg;G vYk;gpy; Vw;gLk; typf;fhf> ePq;fs; rpfpr;ir vLj;J nfhz;bUf;fpd;wPh;fsh?

m) Mk;

M) ,y;iy

Mk; vdpy;> Fwpg;gplTk; …….

10) fh;g;gf;fhy clw;gapw;rpia ePq;fs; njhlh;r;rpahf nra;J nfhz;L tUfpwPh;fsh?

m) Mk;

M) ,y;iy

gphpT - ,

m. ,Lg;G vYk;G gFjpapy; Vw;gLk; typia MuhAk; fhuzpfs;

t. vz;	**,Lg;G vYk;G gFjpapy; Vw;gLk; typahdJ vt;thW eq;fSf;F njhe;jutspf;fpwJ?**	**ghjpf;fTpy;iy (0)**	**vJkpfr;rpwpjstpy; (1)**	**hjpf;fpwJrpwpjsT (2)**	**jpf;fpwJmjpfstpy; (3)**
1.	cil khw;wpf;nfhs;Sk; NghJ				
2.	10 epkplq;fSf;F Fiwthf epw;Fk;NghJ				
3.	60 epkplq;fSf;F Nky; epw;Fk;nghOJ				
4.	FdpAk;nghOJ				
5.	10 epkplq;fSf;F Fiwthf cl;fhUk; nghOJ				
6.	60 epkplq;fSf;F Nky; cl;fhUk; nghOJ				
7.	10 epkplq;fSf;F Fiwthf elf;Fk; nghOJ				
8.	60 epkplq;fSf;F Nky; elf;Fk; nghOJ				
9.	khbg;gbfs; VWk;nghOJ				
10.	tPl;LNtiyfs; nra;Ak;nghOJ				
11.	Nyrhd nghUl;fis J}f;Fk; nghOJ				
12.	gSthd nghUl;fis J}f;Fk;nghOJ				
13.	jiuapy; ,Ue;J vOe;jphpf;Fk; nghOJ my;yJ				

	jiuapy; mkUk;nghOJ				
14.	foptiwapy; cl;fhh;e;J vOe;jpUf;Fk; nghOJ				
15.	jiuapy; gLf;Fk;nghOJ				
16.	gLf;ifapy; Guz;L my;yJ jpUk;gp gLf;Fk;nghOJ				
17.	jhk;gj;a cwT nfhs;Sk;nghOJ				
	nghJthf xU ehspy; vg;nghOnjy;yhk; typapd; tPhpaj;ij czh;fpwPh;fs;?	**typ ,y;iy (0)**	**kpfTk; nfhQ;rk; (1)**	**nfhQ;rk; (2)**	**mjpfstpy; (3)**
18.	fhiyapy; gLf;ifia tpl;L vOe;jTld;				
19.	fhiyapy; ,Ue;J kjpak; tiu				
20.	kjpa Neuq;fspy;				
21.	khiyapy;				
22.	,utpy; gLf;f nry;Yk;nghOJ				
	,Lg;G vYk;G gFjpapy; Vw;gLk; typapdhy; cq;fs; md;whl Ntiyfs; ve;j mstpy; ghjpf;fg;gLfpwJ?	**,y;iy (0)**	**kpfr;rpwpjsT (1)**	**rpwpjsT (2)**	**mjpfstpy; (3)**
23.	kpfTk; rpukg;gl;L fhy;fis vLj;J itj;J elf;fpd;Nwd;.				
24.	jpdrhp Ntiyfis kpfTk; nkJthf nra;fpd;Nwd;.				
25.	J}f;fk; jilgLfpd;wJ.				

kjpg;gPL:

kjpg;ngz;fs;		**typapd; msT**
0	:	typ ,y;iy
1 - 25	:	Fiwe;j typ
26 - 50	:	kpjkhd typ
51 - 75	:	fLikahd typ

M. Fwpg;gpl;l nry;ghLfspd; msTNfhy;

Fwpg;G:

ePq;fs; cq;fSf;F nra;tjw;F fbdkhf cs;s 5 NtiyfisAk; kw;Wk; mjw;fhd kjpg;ngz;fis cq;fSf;F nfhLf;fg;gLk; typ msTNfhypd; %yk; fPo; nfhLf;fg;gl;Ls;s ml;ltizapy; Fwpg;gplTk;.

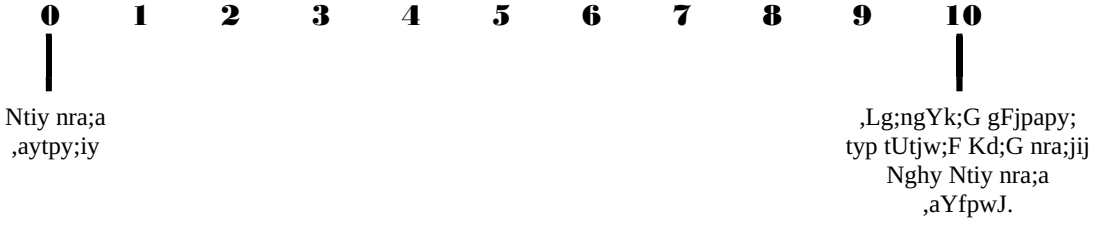
t.vz;	Ntiyfs;	Njjp	Muk;g Ma;tpd; NghJ kjpg;ngz;	njhlh;r;rpahd Ma;Tfspd; NghJ kjpg;ngz;fs;	
				7tJ ehs;	15tJ ehs;
1.					
2.					
3.					
4.					
5.					

nkhj;j kjpg;ngz;fs; = midj;J Ntiyfspd; nkhj;j kjpg;ngz;fs; / Ntiyfspd; vz;zpf;if

ruhrhpahd kjpg;ngz;zpw;fhd Fiwe;jgl;r fz;lwpaf;$ba khWjy; (90% CI) = 2 Gs;spfs;

xt;nthU Ntiyf;fhd Fiwe;jgl;r fz;lwpaf;$ba khWjy; = 3 Gs;spfs;

<u>typ msTNfhy; (VNjDk; xU vz;iz Fwpg;gplTk;)</u>



clw;gapw;rp fhyml;ltiz

ngah;: **khjphp vz;:**

taJ: **njhlh;G vz;:**

t. vz;	**,Lg;G vYk;G gFjpf;fhd clw;gapw;rpfs; (xt;nthU clw;gapw;rpAk; gjpide;J Kiw nra;aNtz;Lk;;)**	**ehl;fs;**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
		Njjp														
1.	tapw;W jirfSf;fhd clw;gapw;rp	fhiy														
2.	,Lg;G jsj;jpw;fhd clw;gapw;rp															
3.	Gl;lg;ngUe;jirf;fhd clw;gapw;rp															
4.	fPo;KJFj;jirf;fhd clw;gapw;rp															
5.	,Lg;G cs;jirf;fhd clw;gapw;rp															
6.	,Lg;G rha; clw;gapw;rp															
7.	,Lg;G ghyk; clw;gapw;rp															
1.	tapw;W jirfSf;fhd clw;gapw;rp	khiy														
2.	,Lg;G jsj;jpw;fhd clw;gapw;rp															
3.	Gl;lg;ngUe;jirf;fhd clw;gapw;rp															
4.	fPo;KJFj;jirf;fhd clw;gapw;rp															
5.	,Lg;G cs;jirf;fhd clw;gapw;rp															
6.	,Lg;G rha; clw;gapw;rp															
7.	,Lg;G ghyk; clw;gapw;rp															

Fwpg;G: jha;khh;fs; clw;gapw;rp nra;jgpd;G xt;nthU ehspw;Fk; jdpj;jdpahf Nkw;fz;l ml;ltizapy; (✓) vdf; Fwpg;gplTk;. clw;gapw;rpf;F nra;ahj ehspw;F Neuhf (-) vdf; Fwpg;gplTk; kw;Wk; VNjDk; xU clw;gapw;rpia nra;jplhky; ,Ue;jpUe;jhy; mf;Fwpg;gpl;l clw;gapw;rpf;F Neuhf (-) vdf; Fwpg;gplTk;.

Muha;r;rpapy; gq;F ngWgtUf;fhd xg;Gjy; gbtk;

md;gpw;Fhpa gq;Nfw;ghsh;fNs>

n[.rj;ah Mfpa ehd; NfhFyk; nrtpypah; fy;Y}hpapy; ,uz;lhk; Mz;L KJfiy nrtpypah; gapw;rp khztp. vdJ gbg;gpd; xU gFjpahf fUTw;wpUf;Fk; NghJ ,Lg;G vYk;G gFjpapy; Vw;gLk; typia clw;gapw;rpapd; %yk; Fiwf;Fk; nghUl;L Xh; Muha;r;rp nra;a cs;Nsd;. ,e;j Muha;r;rp jha;khh;fSf;F fh;g;gf;fhyq;fspy; kw;Wk; gpurtj;jpw;F gpd;G ,Lg;G vYk;G gFjpapy; Vw;gLk; typia Fiwf;f nghpJk; gad;gLk;.

,e;j Muha;r;rpapy; jhq;fs; fye;J nfhz;L jq;fspd; gjpy;fis cz;ikahfTk;> ntspg;gilahfTk; $WkhW jq;fis jho;ikAld; Nfl;Lf;nfhs;fpNwd;. jq;fspd; gjpy;fs; ,ufrpakhf ghJfhf;fg;gLk; vd cWjpaspf;fpNwd;.

Muha;r;rpahsh; ifnahg;gk;

……. vDk; ehd; ,e;j Muha;r;rpapy; fye;Jnfhs;s rk;kjpf;fpNwd;.

gq;FngWNthhpd; ifnahg;gk;

INTRODUCTION

Pregnancy is a precious moment of every women's life. During this period she faces many ailments .Pelvic Girdle Pain is one among that. It is a significant problem for pregnant women as it causes pain, instability and limitation of

movement that affects the mothers physically and psychologically. Early diagnosis and treatment will give the better prognosis.

DEFINITION OF PELVIC GIRDLE PAIN

Discomfort in the pelvic girdle which usually occurs in the front or back of the pelvis which may radiate to buttocks and lower extremities is known as pelvic girdle pain.

DEFINITION OF PELVIC GIRDLE EXERCISES

Pelvic girdle exercise are exercise which helps to improve the stability of the pelvis and back. It consist of abdominal stabilization exercise, pelvic floor exercise, gluteus maximize exercise, latissmus dorsi muscle exercise, pelvic tilting and pelvic bridging.

PURPOSE

- Reduces pelvic girdle pain
- Strengthens abdominal, pelvic, glueteal, pelvic floor and perineal muscles.
- Stabilizes pelvis
- Releases tight muscle
- Improves strength and stability of pelvic bones and joints.
- Improves circulation to muscles
- Reduces low back pain
- Prevents constipation and haemorrhoid
- Maintains bladder and bowel control.

INSTRUCTIONS

1.Pelvic girdle exercise to be done daily
2.Empty the bladder before doing exercise
3.Wear the loose cotton garments
4.Maintain timing in performing
5.Each exercise need to be repeated 15 times at a time
6.Do relaxely and it can be done at any time
7.While doing exercise breath normally

PELVIC GIRDLE EXERCISES

1.Abdominal Stabilization Exercise:

Uses:

1. It strengthens abdominal and pelvic girdle muscles.
2. It reduces pelvic girdle pain.

Procedure:

STEP 1: Sit with your feet resting on the floor.
STEP 2: Gently pull your lower abdominal muscles as if you are hugging your baby.
STEP3: Hold for 5 seconds then return to normal position

2.Pelvic Floor Exercise:

Uses:

1.Strengthen pelvic floor, perineal, Uriniary muscles.
2.Increases blood circulation to pelvic floor muscles.
3.Prevents constipation and piles.
4.Treats urinary incontinence.
5.Maintains bladder and bowel control.

Procedure:

STEP 1: Sit in a chair (or) stand near the wall.
STEP 2: Contract your pelvic floor muscles as if you are trying to control micturation and defecation.
STEP3: Hold for 5 seconds then return to normal position.

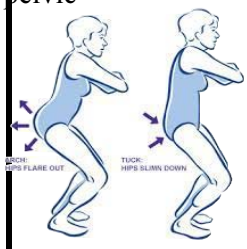
3.Gluteus Maximus Muscle Exercise:

Uses: 1.It Strengthens Gluteus mucles.
2.It Improves stability of Pelvic bone.
3.It reduces pelvic girdle pain.

Procedure:

STEP 1: Sit on a chair

(or)stand comfortably.
STEP 2: Squeeze your buttocks together.



STEP3: Hold for 5 seconds then return to normal position.

4.Latissimus Dorsi Muscle Exercise:

Uses:

1.It Strengthens lower back and calf muscle .
2.It reduces lower back pain.
3.It strengthens pelvic bone .
4.It improves blood circulation to calf muscles.

Procedure:

STEP 1: Sit on a chair in front of a table or a closed door.
STEP 2: Grasp door handle or table with both hands and pull toward you.
STEP3: Hold for 5 seconds then come to normal position

5.Hip Abdurator Muscle Exercise:

Uses:

1.It strengthens pelvic girdle muscles and pelvic bone.
2.It reduces pelvic girdle pain.

Procedure:

STEP 1: Sit down.
STEP 2: Keep your fist or a rolled towel between your knees.
STEP 3: Squeeze knee together.
STEP4: Hold for 5 seconds then come to normal position.

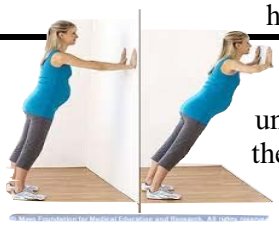
6. Pelvic tilting Exercise:

Uses:

1.It strengthens pelvis, pelvic girdle muscles and abdominal muscles. 2.It reduces pelvic girdle pain.
3.It reduces backache during pregnancy and labour.
4.It improves posture and ease labour

Procedure:

STEP 1: lie on your back with knees bent and feet flat on the floor
STEP 2: Place one hand



under the back and the other over the abdomen.
STEP 3:Tighten your abdominal muscles and buttocks and press your hip towards down.
STEP 4: Hold for 5 seconds then come to normal position.

7. Pelvic bridging Exercise:

Uses:1.It strengthens pelvic girdle muscles and pelvic bone.
2.It reduces pelvic girdle pain.

Procedure:

STEP 1: lie on your back with your knees bent and feet flat on the floor
STEP 2: push down in to the floor with your hands and raise your hip off the floor
STEP 3: Hold for 5 seconds and back to the floor.

CONTRAINDICATIONS

Mothers with

- Hypertensive disorder
- Preterm labour pain
- Unusual nausea , vomiting
- Placenta praevia
- Cervical incompetence
- Pelvic inflammatory disorder
- Fractures injuries

and Surgeries in the back ,pelvis and hip.
- Unusual bleeding

from vagina.

Conculsion:

Pelvic Girdle Exercises are simple exercises that helps to reduce pelvic girdle pain and improves the quality of life of mothers. Regular pelvic girdle exercise has great benefit for the mothers with pelvic girdle pain also it helps to prevent postpartum pelvic girdle pain.

PELVIC GIRDLE EXERCISES

"Do pelvic girdle exercise get rid of pelvic girdle pain"

Kd;Diu:

fUTWjy; vd;gJ xt;nthU ngz;zpd; tho;tpYk; kpf Kf;fpakhd jUzkhFk;. ,f;fhy fl;lj;jpy; fUTw;wpUf;Fk; jha;khh;fs; rpWrpW cghijfis re;jpf;f NehpLk;. ,Lg;G vYk;G gFjpapy; Vw;gLk; typAk; mj;jifa njhe;juTfspy; xd;whFk;. ,J jha;khh;fis clystpYk;> kdjstpYk; ghjpg;gpw;F cs;shtjhy; chpa Neuj;jpy; rpfpr;ir Nkw;nfhs;tJ kpfTk; Kf;fpakhdjhFk;.

,Lg;G vYk;G gFjpapy; Vw;gLk; typ vd;why; vd;d?

,Lg;G vYk;G gFjpapy; Vw;gLk; typ nghJthf fh;g;gpzp ngz;fSf;F tuf; $baJ. ,J xU mnrsfh;akhd czh;thFk;.

,t;typahdJ ,Lg;ngYk;gpd; Kd;Gwj;jpNyh my;yJ gpd;Gwj;jpNyh Vw;gLk; ,q;fpUe;J Gl;lj;jirfs; kw;Wk; fPo;fhy;fSf;F guTk;.

,Lg;G vYk;G gFjpapy; Vw;gLk; typahdJ cq;fs; md;whl Ntiyfis ghjpf;Fk;. ,jw;fhd clw;gapw;rpia njhlh;r;rpahf nra;tjd; %yk; typ FiwtJld; jpdrhp Ntiyfis vg;nghOJk; Nghy; rhjhuzkhf nra;ayhk;.

,Lg;G vYk;G gFjpf;fhd clw;gapw;rpapd; gad;fs;:

- ,Lg;G vYk;G gFjpapy; Vw;gLk; typia Fiwf;f gad;gLfpwJ.
- fPo;KJF> tapW> ,Lg;G> Gl;lk;> Mrdtha; kw;Wk; gpwg;GWg;G jirfis tYg;gLj;Jfpw.
- ,Lg;G vYk;G %l;Lfs; (,iz;Gfs;) vspjhf ,aq;f cjTfpwJ.
- ,Lg;G vYk;Gfis cWjpahf;FfpwJ.
- fPo;KJF typia Fiwf;fpwJ.
- ,Lg;Gjs jirfSf;F ,uj;j Xl;lj;ij mjpfg;gLj;JfpwJ.
- kyr;rpf;fy;> %yk; Nghd;w njhe;juTfs; Vw;glhky; jLf;fpd;wJ.
- nfz;ilfhy;fSf;F ,uj;j Xl;lj;ij mjpfg;gLj;JfpwJ.

clw;gapw;rp nra;Ak; Kd; filg;gpbf;fg;gl Ntz;bait:

- ,t;Tlw;gapw;rpfis jpdKk; nra;a Ntz;Lk;.
- xt;nthUKiw nra;Ak;NghJk; xt;nthU clw;gapw;rpia Ak; 5 Kiw jpUk;g nra;a Ntz;Lk;.
- ,t;Tlw;gapw;rpapd; NghJ rhjhuzkhf Rthrpf;fyhk;.
- clw;gapw;rpfis Kiwahfr; nra;aTk;.
- rpWePh; fop;Jtpl;L clw;gapw;rp nra;a njhluTk;.
- jsh;thd gUj;jp Milia mzpaTk;.
- ,t;tidj;J clw;gapw;rpfisAk; ve;Neuj;jpYk; ,ay;ghf nra;ayhk;.

,Lg;G vYk;gpy; Vw;gLk; typf;fhd clw;gapw;rpfs;

1. tapw;W jirfSf;fhd clw;gapw;rp:

gb-1: fUTw;wpUf;Fk; jha;khh;fs;> ghjq;fs; ed;whf iuapy; gLk;gb ,U;ifapy; mku Ntz;Lk;.

gb -2: Foe;ijia J}f;Fk;NghJ nra;tJ Nghy fPo;tapw;W jirfis ,Oj;J gpbf;fr; nrhy;yTk;.

gb-3: ,Nj epiyapy; 5 tpdhbfs; njhluTk;. gpd;G ,ay;Gepiyf;F jpUk;gTk;.

gad;fs;:

- ,Lg;G jirfis tYg;gLj;jTk;> ,Lg;G vYk;gpy; Vw;gLk; typia Fiwf;fTk; cjTfpwJ.

2. ,Lg;G jsj;jpw;fhd clw;gapw;rp

gb-1: fUTw;wpUf;Fk; jha;khh;fs; ehw;fhypapy; mkuNth my;yJ Rtw;wpd; Xuk; epw;fNth Ntz;Lk;.

gb-2: Mrdtha;> kw;Wk; gpwg;gWg;G jirfis rpWePh;> kw;Wk; kyk; tUk;NghJ mlf;fp nfhs;s ,Wf;fp gpbg;gij Nghy ed;F ,Wf;fp gpbf;fNtz;Lk;.

gb-3: ,Nj epiyapy; 5 tpdhbfs; ,Uf;fTk; gpd;G ,ay;Gepiyf;F jpUk;gTk;.

gad;fs;:

- ,Lg;Gj;js jirfis tYg;gLj;JfpwJ.
- Mrdtha; kw;Wk; rpWePh;ig jirfis tYg;gLj;JfpwJ.
- ,Lg;Gj;js jirfSf;F ,uj;j Xl;lj;ij mjpfhpf;fpwJ.
- kyr;rpf;fy;> %yk; kw;Wk; rpWePh; fopg;gjpy; tUk; njhe;juTfs; tuhky; jLf;f cjTfpwJ.

3. Gl;lg; ngUe;jirf;fhd clw;gapw;rp

gb-1: fUTw;wpUf;Fk; jha;khh;fs; ,Uf;ifapy; trjpahf mkuyhk; my;yJ epw;fyhk;.

gb-2: ,uz;L Gl;lj;jirfisAk; ,Wf;fp nfhs;sNtz;Lk;.

gb-3: ,Nj epiyapy; 5 tpdhbfs; njhluTk;. gpd;G ,ay;G epiyf;F jpUk;gTk;.

gad;fs;:

- Gl;lj;jirfis tYTwr; nra;fpwJ.
- ,Lg;ngYk;ig tYg;gLj;JfpwJ.
- ,Lg;G vYk;gpy; Vw;gLk; typia Fiwf;fpwJ.

4. fPo; KJFj; jirf;fhd clw;gapw;rp

gb-1: fUTw;wpUf;Fk; jha;khh;fs;

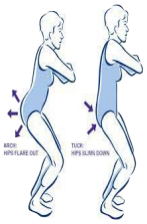
Rtw;wpd; Kd;G ,Ufhy;fisAk; rw;W mfykhf itj;jgb> ,U cs;sq;iffSk; Rtw;wpy; gLk;gb epw;fNtz;Lk;.

gb-2: fhy;Kl;bia klf;fhky; if Kl;bfis kl;Lk; klf;fp cq;fs; Kfk; Rtw;wpy; gLk;gb nra;aNtz;Lk;.

gb-3: ,NjNghd;W 5 tpdhbfs; njhluTk;. gpd;G ,ay;Gepiyf;F jpUk;gTk;.

gad;fs;:

- fPo;KJF jirfis tYg;gLj;Jfpw..
- fPo; KJF typia Fiwf;fpwJ.
- ,Lg;ngYk;ig tYg;gLj;Jfpw..
- nfz;ilf;fhy; jirfSf;F cWjpaspf;fpwJ.
- nfz;ilf;fhy; jirfspd; ,uj;j Xl;lj;ij mjpfg;gLj;JfpwJ.



5. ,Lg;G cs;jirf;fhd clw;gapw;rp

gb-1: fUTw;wpUf;Fk; jha;khh;fs; ,Uf;ifapy; trjpahf mkh;e;J nfhz;L my;yJ gLf;ifapy; gLj;Jf;nfhz;L ghjk; gLf;ifapy; gLk;gb Kl;bia klf;fp itf;fNtz;Lk;.

gb-2: ed;F kbj;j Jz;il my;yJ rpwpa jiyaizia ,Ufhy;fspd; Kl;bapd; eLtpy; itf;fNtz;Lk;.

, U K l;bfshY k; Jz;il my;yJ jiyaizia mOj;jNtz;Lk;.

gb-4: ,Nj epiyapy; 5 tpdhbfs; ,Uf;fTk;. gpd;G ,ay;G epiyf;F jpUk;gTk;.

gad;fs;:

- ,Lg;G vYk;G jirfs; kw;Wk; ,Lg;G vYk;ig tYg;gLj;Jfpw..
- ,Lg;G vYk;gpy; Vw;gLk; typia Fiwf;fpwJ.

6. ,Lg;G rha; clw;gapw;rp

gb-1: fUTw;wpUf;Fk; jha;khh;fs; jq;fs; KJF jiuapy; gLkhW gLj;J> fhy;fis klf;fp ghjj;jpid jiuapy; gLkhW itf;f Ntz;Lk;.

gb-2: xU ifapid tapw;wpd; Nkw;GwKk;> kw;nwhU ifia ,Lg;gpd; fPOk; itf;fTk;.

gb-3: ,Lg;gpid gpd;Gwkhf ifNahL Nrh;j;J mOj;jTk;.

gb-4: ,Nj epiyapy; 5 tpdhbfs; njhluTk;. kPz;Lk; ,ay;G epiyf;Fj; jpUk;gTk;.

gad;fs;

- ,Lg;G vYk;G jirfs; kw;Wk; ,Lg;G

,Lg;G vYk;G gFjpapy; Vw;gLk; typf;fhd clw;gapw;rpfs;

vYk;ig tYg;gLj;JfpwJ.

- ,Lg;G vYk;gpy; Vw;gLk; typia Fiwf;fpwJ.
- fh;g;gf;fhyk; kw;Wk; gpurt Neuj;jpd; NghJ Vw;gLk; gpd;KJF typia Fiwf;fpwJ.
- Rfg;gpurtj;jpw;F cj1fpwJ.

7. ,Lg;G ghyk; clw;gapw;rp

gb-1: fUTw;wpUf;Fk; jha;khh;fs; jq;fs; KJF jiuapy; gLkhW gLj;J> fhy;fis klf;fp ghjj;jpid jiuapy; gLkhW itf;f Ntz;Lk;.

gb-2: iffis ,UGwKk; fPNo Cd;wp jq;fs; ,Lg;ig jiuapypUe;J Nkyhf cah;j;j Ntz;Lk;.

gb-3: ,Nj epiyapy; 5 tpdhbfs; njhluTk;> gpd;dh; ,ay;G epiyf;F jpUk;gTk;.

gad;fs;:

- ,Lg;G vYk;G jirfis tYg;gLj;JfpwJ.
- KJFtypia Fiwf;fg; gad;gLfpwJ.
- ,Lg;G cs;SWg;GfSf;F ,uj;j Xl;lj;ij mjpfhpf;fpwJ.

Nkw;fz;l clw;gapw;rpfis ahnuy;yhk; jtph;f;fNtz;Lk;.

- cah; ,uj;j mOj;jk; cs;s fh;g;gpzp ngz;fs;
- Fiwkhj gpurt typ cs;sth;fs;
- tof;fj;jpw;F khwhd jiyr;Rw;wy;> kaf;fk;> the;jp ,Uj;jy;
- ,Lg;ngYk;gpy; mbg;gl;lth;fs;;
- ,Lg;ngYk;gpy; VNjDk; mWit rpfpr;ir nra;J nfhz;lth;fs;.
- gpwg;GWg;Gfspy; , uj;jf;lfp1 Vw;glf; $ba nghak; cs;sth;fs;
- mghafukhd

, j af;

NfhshW cs;sth;fs;.

KbTiu:

,Lg;G vYk;G gFjpf;fhd clw;gapw;rpfs; kpfTk; vspjhf nra;af;$ba xd;whFk;. ,ij njhlh;;rpahf nra;tjhy; ,Lg;G vYk;G gFjpapy; Vw;gLk; typ FiwtJld; ,Lg;G vYk;Gfs;> ,Lg;G vYk;G jirfs; tYg;ngWfpd;wd. ,jd; %yk; gpurtj;jpw;F gpwF uf;$ba ,Lg;G vYk;Gg;gFjpfspy; typ> fPo; KJFtyp> rpWePh; fopg;gjpy; tUk; rpf;fy;fs; (urinary incontinence) Nghd;w njhe;juTfis jtph;f;fyhk;.

ANNEXURE - V

LIST OF EXPERTS FOR CONTENT VALIDITY

1. **Dr.P. Chellammal, M.D., D.G.O.,**

   Consultant, Obstetrician and Gynaecologist,

   Sri Gokulam Hospital,

   Salem.

2. **Dr.Akila, MS (O.G).,**

   Consultant, Obstetrician and Gynaecologist,

   Sri Gokulam Hospital,

   Salem.

3. **Mrs. Amudha, M.Sc(N).,**

   Principal,

   SPC College of Nursing,

   Salem.

4. **Mrs.Nalini, M.Sc(N)**

   Principal,

   Kamala College of Nursing,

   Salem.

5. **Mrs.Parimala, M.Sc(N)**

   H.O.D, Obstetrics & Gynaecological Nursing,

   Vinayaka Mission Annapoorna College of Nursing,

   Salem.

6. **Mrs.M. Jansi Rani, M.Sc(N)**

H.O.D, Obstetrics & Gynaecological Nursing,

Shanmuga College of Nursing,

Salem.

7. **Mrs. Ilanagai, M.Sc(N)**

Assistant Professor,

Shanmuga College of Nursing,

Salem.

8. **Mrs. Sunitha,**

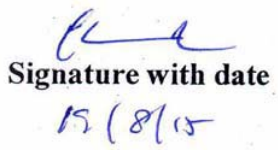
Physiotherapist,

Sri Gokulam Hospital,

Salem – 4.

CERTIFICATE FOR VALIDATION

This is to certify that the tool developed by Mrs.Sathya.J, Final Year M.Sc Nursing student of Sri Gokulam College of Nursing, Salem (Affiliated to Dr.M.G.R Medical University) is validated and can proceed with this tool and content for the main study entitled **"A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected hospitals, Salem".**



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20.8.15

Signature with date

Dr. A. AKILA, M.S.(OG),
Consultant Obstetrician & Gynaecologist
Regn. No. 63335
Sri Gokulam Hospital,
SALEM - 636 004.

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6/8/15

Signature with date

The Principal
SPC Institute of Nursing Education & Research
Achankuttapatti, Salem Dt.

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HEAD OF THE DEPARTMENT
DEPT. OF OBSTETRICS AND GYNAECOLOGICAL NURSING
Vinayaka Mission's Annapoorana College of Nursing
Vinayaka Mission's Research Foundation
Deemed University
SALEM - 636 308

Signature with date

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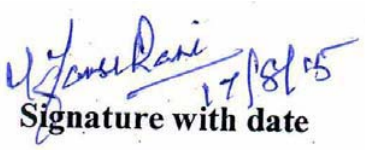

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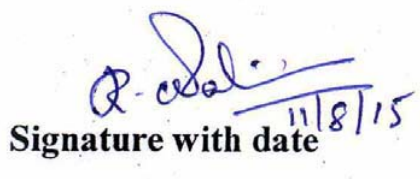

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N.Rmy

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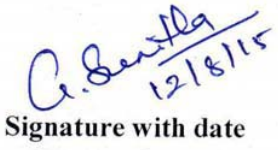

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ANNEXURE - VI

CERTIFICATE OF EDITING

TO WHOMEVER IT MAY CONCERN

Certified that the dissertation paper titled **"A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected hospitals, Salem" By Mrs. J.SATHYA,** it has been checked for accuracy and correctness of English language used in presenting the paper is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose.

Date: 23.08.2015

Signature

Name & Designation.

B.DEEPALAKSHMI,
B.T. ASSISTANT,
GOVT.Hr.Sec.School,
Udayapatty,
SALEM-

CERTIFICATE OF EDITING

TO WHOMEVER IT MAY CONCERN

Certified that the dissertation paper titled **"A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected hospitals, Salem" By Mrs. J.SATHYA,** it has been checked for accuracy and correctness of Tamil language used in presenting the paper is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose.

Date: 20.08.2015

Signature

Name & Designation.

CERTIFICATE OF EDITING

TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled **"A Study to Assess the Effectiveness of Pelvic Girdle Exercise on Pelvic Girdle Pain and Specific Activities among Primigravida Mothers Attending Antenatal OPD at Selected hospitals, Salem"**. by **Mrs. SATHYA.J,** It has been checked for accuracy and correctness of English language usage and that the language used in presenting the paper is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose.

Signature with date
D. JAYAVELU
Prof & Head
Department of English
Muthayammal Engineering College
Rasipuram - 637408.

ANNEXURE - VII

PHOTOS